

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

Petitions by JOEL JAFFER, GARRETT )  
CONNELLY, PACIFIC GAS & ELECTRIC CO., )  
JUDITH EVERED, LAURENCE H. FROMMHAGEN, )  
P.O.I.S.E., JONATHAN R. McHUGH, ISLA )  
VISTA RECREATION & PARK DISTRICT, and )  
MOTHERS FOR PEACE for Review of )  
Orders Nos. 82-24 and 82-54 of the )  
California Regional Water Quality )  
Control Board, Central Coast Region. )  
Our Files Nos. A-307, A-307(a)-(h). )  
NPDES Permit No. CA0003751. )

Order No. WQ 83-1

BY THE BOARD:

On January 14, 1982, the California Regional Water Quality Control Board, Central Coast Region (Regional Board) adopted Order No. 82-24 (NPDES Permit No. CA0003751), establishing waste discharge requirements for Pacific Gas and Electric Company's Diablo Canyon Nuclear Power Plant, Units 1 and 2. The State Water Resources Control Board (State Board or Board) received petitions for review of Order No. 82-24 from Joel Jaffer on February 5, 1982, Pacific Gas and Electric Company (PG&E) on February 9, 1982, Garrett Connelly on February 10, 1982, Judith Evered on February 11, 1982, Laurence H. Frommhagen, P.O.I.S.E. (also known as People for Open, Informal, Self-Directed Education), and Jonathan R. McHugh on February 16, 1982, and Isla Vista Recreation and Park District on February 25, 1982.<sup>1/</sup>

On June 11, 1982, the Regional Board adopted Order No. 82-54, amending Order No. 82-24. By a letter dated

June 16, 1982, the State Board notified the above petitioners that they would be given the opportunity to submit amended petitions addressing the Regional Board's action of June 11, 1982. In response to the State Board's June 16 notification, the State Board received amended petitions from Garrett Connelly on July 6, 1982, PG&E on June 29, 1982, Judith Evered on July 21, 1982, P.O.I.S.E. on July 1, 1982, and Isla Vista Recreation and Park District on July 2, 1982. In addition, on July 12, 1982, the State Board received a new petition from Mothers for Peace for review of both Regional Board Orders Nos. 82-24 and 82-54.<sup>2/</sup>

The petitions of Joel Jaffer, Garrett Connelly, Laurence H. Frommhagen, P.O.I.S.E., Jonathan R. McHugh, and Isla Vista Recreation and Park District include requests for a stay of Regional Board Order No. 82-24. Petitioner Garrett Connelly also requests a stay of Order No. 82-54. In addition, petitioners Joel Jaffer, Garrett Connelly, Laurence H. Frommhagen, P.O.I.S.E., Jonathan R. McHugh, Isla Vista Recreation and Park District, and Mothers for Peace request a hearing on the merits of their petitions.<sup>3/</sup>

#### I. BACKGROUND

The Diablo Canyon Nuclear Power Plant (Diablo Canyon Plant) is located on the California coast, adjacent to Diablo Cove, about 12 miles southwest of the City of San Luis Obispo. The plant is a nuclear-powered steam electric generating station consisting of two units. Unit 1 is designed for a net electrical output of 1,086 megawatts and Unit 2 for an output of 1,119 megawatts.

The Diablo Canyon Plant was designed with a once-through cooling system utilizing seawater to cool the main condensers. Seawater used for cooling is drawn from an intake structure located at the shoreline of a cove, 1,000 feet south of the power plant. The intake structure draws water from the surface to a depth of minus 31.5 feet below mean sea level. For each unit, water is pumped by two main circulating water pumps from the intake cove approximately 130 feet uphill to the power plant.

Each unit of the Diablo Canyon Plant has two condensers. The cooling water passes through the condensers, where it is heated, then flows through conduits to a cascade discharge structure located at the shoreline of Diablo Cove.

With both units operational, PG&E proposes to discharge a maximum of 2.67 billion gallons per day from the plant. This discharge consists primarily of heated seawater with smaller quantities of in-plant chemical wastes and low-level radioactive wastes.

PG&E has not yet begun commercial operation of either Units 1 or 2. The company has completed construction of Unit 1 and is waiting for the reissuance of a license from the Nuclear Regulatory Commission (NRC) for low power testing.<sup>4/</sup> Unit 2 is nearly complete, and PG&E expects to receive an operating license for this unit from the NRC approximately eight months after Unit 1 begins operation.

The Regional Board first issued waste discharge requirements for the Diablo Canyon Plant in 1969.<sup>5/</sup> Subsequent permits were issued by the Regional Board to PG&E under the

National Pollutant Discharge Elimination System (NPDES) permit program in 1974<sup>6/</sup> and 1976. The 1976 permit, Order No. 76-11,<sup>7/</sup> expired on May 1, 1981, and in January 1981, PG&E applied for reissuance of a permit.

The Regional Board conducted public hearings on the application on September 11, 1981 in Santa Barbara; September 24 and October 9 in San Luis Obispo; October 29 and 30 in Pismo Beach; November 13 and 14 in San Luis Obispo; and January 14, 1982 in Santa Barbara. On January 14, 1982, the Regional Board reissued a permit, Order No. 82-24, for the Diablo Canyon Plant.

The most notable provision of Order No. 82-24 was Discharge Prohibition A.6 which prohibited the discharge of elevated temperature wastes exceeding ambient temperatures until July 1, 1982, or until the Regional Board had had the opportunity to reconsider the prohibition in accordance with the terms of the Order. Exceptions to the prohibition were allowed, however, for discharges from safety equipment required for non-power production operations and for low power testing, provided that the temperature increase did not exceed 2° F. Order No. 82-24 further provided that, in order for the Regional Board to consider modification of Discharge Prohibition A.6, PG&E was required to submit, prior to April 1, 1982, a technical report which (1) evaluated alternative plans to reduce the heat and volume of the proposed cooling water discharge and (2) contained further information on anticipated and possible thermal and volume effects of the discharge on the beneficial uses of the ocean.<sup>8/</sup>

On March 30, 1982, PG&E submitted technical reports entitled, "Assessment of Alternatives to the Existing Cooling Water System" and "Thermal Discharge Assessment Report", as required by Order No. 82-24. Accordingly, the Regional Board conducted further public hearings on May 14 and June 11, 1982, in San Luis Obispo to consider modification of Discharge Prohibition A.6 of Order No. 82-24. At the conclusion of the hearings, the Regional Board adopted Order No. 82-54, amending Order No. 82-24.

Order No. 82-54 deleted Discharge Prohibition A.6 entirely and substituted effluent limitations allowing a maximum 20° F. increase in temperature of the discharge over that of the intake, except during heat treatment for demusseling.<sup>9/</sup> For heat treatment of Unit 1, Order No. 82-54 allows a maximum discharge temperature of 100° F. and requires that the Unit 2 circulating water pumps be operated at full capacity with no commercial load.<sup>10/</sup> Prior to commercial operation of Unit 2, Order No. 82-54 requires PG&E to evaluate alternative demusseling programs and propose to the Regional Board a method to reduce heat treatment at the point of discharge of both units to 86° F.<sup>11/</sup> Order No. 82-54 also added an effluent limitation specifying a maximum discharge from the Diablo Canyon Plant of 2.67 billion gallons per day.<sup>12/</sup>

## II. STAY REQUESTS

Water Code Section 13321 authorizes the State Board, in acting upon a petition for review of a Regional Board action, to "upon notice and a hearing, . . . stay in whole or in part the effect of the decision and order of a regional board. . . ." The

issuance of a stay is a discretionary action, and the purpose of issuance is to preserve the status quo until the State Board has had the opportunity to consider and act upon the merits of the appeal before the Board.

In this instance the State Board has found it unnecessary to act upon petitioners' stay requests because PG&E is unable to operate either Unit 1 or 2.<sup>13/</sup> As indicated previously, PG&E must await further action from the NRC before commencing low power testing of Unit 1, and the schedule for operation of Unit 2 lags behind that for Unit 1.

### III. HEARING REQUESTS

The Regional Board conducted ten days of public hearings, primarily in the San Luis Obispo area, to receive testimony on the NPDES permit for the Diablo Canyon Plant. Testimony was introduced into the record of these hearings on both radiation and non-radiation related matters. The record which was developed is extremely voluminous. The hearing transcripts alone contain in excess of 2,300 pages.

The State Board has concluded that further public hearings on this matter would be of little benefit. The Board believes that the Regional Board did a commendable job of encouraging public participation in a very difficult decision-making process. Because of the Regional Board's efforts, this Board is confident that the public has had ample opportunity to introduce testimony on the Diablo Canyon NPDES permit. Therefore, under our authority contained in Water Code Section 13320, we have determined to review this matter on the basis of the record before the Regional Board.

#### IV. CONTENTIONS AND FINDINGS

##### A. Release of Radiation from the Diablo Canyon Plant

Contention: A number of the petitioners have raised issues regarding the release of radiation from the Diablo Canyon Plant, either through planned or accidental occurrences. The contentions cover both releases of radiation into the atmosphere and into the waters of Diablo Cove.

Petitioner Judith Evered, for example, contends that Order No. 82-24 is improper because research has shown that releases of low level radiation from the Diablo Canyon Plant will cause a certain percentage of deaths. In addition, petitioner alleges that a "Class 9" accident<sup>14/</sup> at the Diablo Canyon Plant, due to human error, mechanical failure, or an earthquake, would endanger the surrounding areas, ocean, air and land due to releases of radiation. Petitioner further contends that the technology for the nuclear industry must be improved in order to prevent accidents which would result in increased levels of ocean pollution.

Petitioner P.O.I.S.E. alleges that Order No. 82-24 is improper because radiation from the Diablo Canyon Plant is toxic and will eventually enter the food chain through evaporation, clouds and rain. Further, P.O.I.S.E. argues that current policy regarding normal operating levels of radiation violates moral principles and the constitutional rights to due process and equal protection.

Petitioner McHugh challenges Order No. 82-24 on the grounds that the NRC's radiation limits are unconstitutional and that the Regional Board erred in failing to limit the release of radiation into liquid pathways. Petitioner Isla Vista Recreation and Park

District, similarly, contends that Order No. 82-24 is inappropriate because the release of radioactive effluent into the ocean will impair its beneficial uses. Additionally, petitioner contends that Order No. 82-54 is improper because of the problems of decontaminating nuclear facilities.

Petitioner Mothers for Peace objects to Order No. 82-24 on the grounds that the release of radiation to the environment should be prohibited. Petitioners Mothers for Peace, Laurence H. Frommhagen, Joel Jaffer, and Garrett Connelly also object to Orders Nos. 82-24 and 82-54 on the ground that the Regional Board failed to properly consider the effects of the release of airborne radioactive contaminants on water quality.

PG&E's response to the above allegations is twofold. First, the company contends that the states are pre-empted from regulating the discharge of radioactive materials from nuclear power plants. In this regard, PG&E contends that the radiation limits included in Order No. 82-24, as amended,<sup>15/</sup> must be stricken because the NRC has exclusive authority to regulate in this area. Secondly, PG&E asserts that, in any event, the State and Regional Boards do not have jurisdiction to regulate the release of radioactive materials into the atmosphere.

Finding: Petitioners' contentions raise the issue of the extent to which the state is pre-empted from regulating the release of radioactive waste from nuclear power plants. The doctrine of federal pre-emption has its roots in the Supremacy Clause of the United States Constitution, Article XI, Clause 2, which provides:

"This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding."

When state regulation is challenged under the doctrine of federal pre-emption, it must be determined whether Congress has exercised its power of legislation in such a manner as to exclude the states from asserting concurrent jurisdiction over the same subject matter. Pre-emption may be shown in three ways. First, federal law will prevail where compliance with both federal and state regulations is a physical impossibility.<sup>16/</sup> Second, when Congress has expressly declared that federal authority over a particular subject matter shall be exclusive, concurrent state regulation of the same subject matter is prohibited.<sup>17/</sup> Third, federal pre-emption may be implied.<sup>18/</sup> Factors which a court may consider in determining whether Congress has, by implication, pre-empted dual regulation by the states include: the intent of Congress as revealed by the statute itself and its legislative history; the pervasiveness of the federal regulatory scheme; and the nature of the subject matter regulated.<sup>19/</sup>

To determine whether the federal government has pre-empted state regulation of radioactive releases from nuclear power plants, it is necessary to examine the legislative history of the Atomic Energy Act of 1954 and its 1959 amendments and judicial rulings on the state's role in the regulation of nuclear reactors.

Initially, the development of atomic energy was the result of the World War II military effort and was a highly secret activity

monopolized by the federal government.<sup>20/</sup> In 1946 Congress transferred the responsibility for development of atomic energy to a civilian agency, the Atomic Energy Commission (AEC), which retained a monopoly interest over the production and use of all fissionable materials.<sup>21/</sup>

In 1954 the Atomic Energy Act was amended<sup>22/</sup> to allow private industry to participate in the development and utilization of atomic energy for peaceful purposes "to the maximum extent consistent with the common defense and security and with the health and safety of the public."<sup>23/</sup> The 1954 amendments ended the government monopoly over atomic energy and opened the door to private development of nuclear energy for commercial and industrial uses in accordance with a comprehensive licensing and regulatory scheme administered by the AEC. The 1954 Act, in particular, authorized ownership of production<sup>24/</sup> and utilization<sup>25/</sup> facilities and the possession, transfer, or use of source material,<sup>26/</sup> special nuclear material,<sup>27/</sup> and byproduct material<sup>28/</sup> by private individuals under a license issued by the AEC.<sup>29/</sup>

Section 271 of the 1954 Act<sup>30/</sup> preserved state authority to regulate the generation, sale, and transmission of electrical power produced by nuclear plants. With the exception of this provision, however, the Act essentially ignored the question of state authority to regulate the nuclear facilities and materials over which the AEC exerted regulatory control.

After passage of the 1954 Act, efforts were made to amend the Act to clarify the role of the states in this area. In late June 1957, the AEC forwarded a proposed bill to the Joint Committee

on Atomic Energy of the United States Congress which would have authorized the enforcement by the states of concurrent radiation safety standards "not in conflict" with those of the AEC.<sup>31/</sup>

This bill was never reported out of committee, however.

In 1959 a new section, entitled "Cooperation with States,"<sup>32/</sup> was added to the Atomic Energy Act. The new section 274 rejected the concept of dual regulations by the state and federal governments of nuclear materials and facilities for protection against radiation hazards. Rather, the principal thrust of the section is to authorize the AEC to enter into agreements with the states for the discontinuance of federal regulatory authority over three classes of nuclear materials, source, byproduct, and special nuclear materials in quantities not sufficient to form a critical mass. During the duration of the agreement, the state is authorized to regulate the materials covered by the agreement for the protection of the public health and safety from radiation hazards.<sup>33/</sup> State standards for protection against radiation hazards must be "coordinated and compatible" with those of the AEC,<sup>34/</sup> and the legislative history of section 274 indicates that the state standards were intended to be identical<sup>35/</sup> with AEC standards.

Under section 274 the AEC is prohibited from discontinuing its authority in several areas. In particular, subsection (c) states, in pertinent part:

"(c) No agreement entered into pursuant to subsection (b) of this section shall provide for discontinuance of any authority and the Commission shall retain authority and responsibility with respect to regulation of --

(1) the construction and operation of any production or utilization facility;"

The Commission's authority over the construction and operation of production and utilization facilities has been consistently interpreted to include control over the discharge of radioactive effluent from nuclear plants.<sup>36/</sup>

Conversely, subsection (k) of section 274 provides that "[n]othing in this section shall be construed to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards." Under this provision, the states retain authority whether or not they have entered into an agreement with the AEC, to regulate non-radiation hazards.

The legislative history of section 274 sheds further light on the respective roles of the federal and state governments in the regulation of atomic energy. In the Senate Report the Committee commented that:

"The bill applies to some, but not all atomic energy activities now regulated exclusively by AEC. It applies principally to radioisotopes, whose use and present licensing by AEC is widespread, but whose hazard is local and limited. Moreover, the radiation hazard from radioisotopes has similarities to that from other radiation sources already regulated by States -- such as X-ray machines and radium. Licensing and regulation of more dangerous activities -- such as nuclear reactors -- will remain the exclusive responsibility of the Commission. Thus a line is drawn between types of activities deemed appropriate for regulation by individual States at this time, and other activities where continued AEC regulation is necessary."

\* \* \*

"It is not intended to leave any room for the exercise of dual or concurrent jurisdiction by States to control radiation hazards by regulating byproduct, source, or special nuclear materials. The intent is to have the material regulated and licensed either by the Commission, or by the State and local governments, but not by both. The bill is

intended to encourage States to increase their knowledge and capacities, and to enter into agreements to assume regulatory responsibilities over such materials."37/

With respect to subsection (k), the Senate Report stated:

"Subsection (k) provides that nothing in the new section 274 shall be construed to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards. This subsection is intended to make it clear that the bill does not impair the State authority to regulate activities of AEC licensees for the manifold health, safety, and economic purposes other than radiation protection. As indicated elsewhere, the Commission has exclusive authority to regulate for protection against radiation hazards until such times as the State enters into an agreement with the Commission to assume such responsibility."38/

The preemptive effect of the Atomic Energy Act of 1954 and its 1959 amendment was first considered by a federal appellate court in the landmark case, Northern States Power Co. v. Minnesota [Northern States.] The court framed the issue in this case as "whether the federal government, through the United States Atomic Energy Commission..., had exclusive authority to regulate the radioactive waste releases from nuclear power plants so as to preclude Minnesota from exercising any regulatory authority over the release of such discharges from the Monticello plant."<sup>39/</sup> The controversy had arisen because Minnesota had imposed conditions upon the release of radioactive liquid and gaseous discharges from an AEC-licensed nuclear plant which were more stringent than those imposed by the AEC.

After noting that there was no physical impossibility of dual compliance with the AEC and Minnesota regulations, the court in Northern States found that Congress had impliedly preempted the states from concurrent regulation of radiation emissions

from nuclear plants. The court reached this conclusion based upon its review of the legislative history of the Atomic Energy Act of 1954 and its 1959 amendments, administrative interpretations of the Act, and the nature of the subject matter which was being regulated. In particular, the court found that the 1959 amendments "reflected Congressional recognition that the AEC at that time possessed the sole authority to regulate radiation hazards associated with byproduct, source, and special nuclear materials and with production and utilization facilities."<sup>40/</sup> Further, the court concluded that subsection (k) of section 274<sup>41/</sup> of the Act "illustrated Congressional recognition and intention that the States possess no authority to regulate radiation hazards unless pursuant to the execution of an agreement surrendering federal control over the three categories authorized" under the 1959 amendments.<sup>42/</sup> Finally, the court found that even in "agreement states," the states are prohibited from exercising dual control over radiation hazards associated with nuclear power plants. Specifically, the court held that "the federal government has exclusive authority under the doctrine of pre-emption to regulate the construction and operation of nuclear power plants, which necessarily includes regulation of the levels of radioactive effluents discharged from the plant."

After the Northern States decision was rendered, Congress enacted the Federal Water Pollution Control Act Amendments of 1972.<sup>44/</sup> Under this Act, the Environmental Protection Agency or a state, if it has developed an approved program, is authorized to regulate the discharge of "pollutants" from point sources into navigable waters under the National Pollutant Discharge Elimination

System [NPDES] permit program.<sup>45/</sup> "Pollutant" is defined broadly to include a spectrum of wastes, including radioactive materials.<sup>46/</sup>

In Train v. Colorado Public Interest Research Group, 426 U.S. 1 (1976) (Train v. Colorado) the United States Supreme Court considered whether "pollutant" included nuclear waste materials regulated under the Atomic Energy Act of 1954, as amended. After reviewing the legislative history of the Federal Water Pollution Control Act Amendments of 1972, the court held that "pollutant" does not include source, byproduct, or special nuclear materials regulated under the Atomic Energy Act, and, therefore, that EPA, and hence the states, are precluded from regulating the release of radioactive wastewater from a nuclear reactor under the NPDES permit program. In reaching this conclusion the court reaffirmed the holding in Northern States.

Two legislative enactments, passed subsequent to the Atomic Energy Act, signal a possible shift in attitude by Congress toward greater state participation in the regulation of radiological hazards from NRC-licensed activities. In 1974 Congress enacted the Energy Reorganization Act.<sup>47/</sup> This Act abolished the AEC, transferring its development and research functions to the Energy Research and Development Administration [ERDA]<sup>48/</sup> and its regulatory and licensing functions to the NRC. The reorganization was prompted by mounting criticism that the conflicting duties of the AEC of both promoting and regulating the nuclear industry resulted in an unwarranted pro-nuclear bias.<sup>49/</sup>

More significantly, Congress in 1977 partially rescinded the federal pre-emption of state regulation of radiation hazards

from NRC-licensed facilities. In the Clean Air Act Amendments of 1977,<sup>50/</sup> Congress authorized EPA and the states to regulate radioactive air emissions from nuclear power plants.<sup>51/</sup> This legislation empowers the states to impose radioactive air emission limits on NRC-licensed nuclear plants that are more stringent than NRC standards.<sup>52/</sup> Further, the legislative history of the 1977 amendments indicates an intent to overrule Northern States in the specific content of radioactive air emissions from NRC licensed facilities.<sup>53/</sup>

The Federal Water Pollution Control Act was also amended in 1977.<sup>54/</sup> The amendments, however, did not alter the definition of "pollutants" in the Clean Water Act nor otherwise address the Supreme Court's holding in the Train v. Colorado case.

Finally, the 1982 decision of the Ninth Circuit Court of Appeals in Pacific Legal Foundation v. State Energy Resources Conservation and Dev. Comm. [Pacific Legal Foundation],<sup>55/</sup> should be noted. In this opinion the court considered the validity of several provisions of California's Warren-Alquist Act,<sup>56/</sup> which were challenged as pre-empted by the Atomic Energy Act. Specifically, the court examined a requirement of the Warren-Alquist Act that utilities submit at least three alternate sites for a proposed power plant<sup>57/</sup> and a prohibition against the certification of new nuclear plants until the State Energy Resources and Development Commission (Energy Commission) finds that a federally approved method of disposing of nuclear wastes exists.<sup>58/</sup>

After reviewing the legislative history of the Atomic Energy Act and cases construing the Act, the court concluded that

Congress intended to preempt only state regulation of NRC-licensed activities for protection against radiation hazards, and that state regulation in other areas, e.g., land use and economics, was not preempted. Finding that the three-site requirement and the moratorium provision were enacted for purposes other than protection against radiation hazards, the court concluded that these provisions were not preempted.<sup>59/</sup>

The Pacific Legal Foundation case is significant because it followed the holding of Northern States and other cases which have considered the states' authority over nuclear plants. These cases have consistently held that the states are preempted, with certain exceptions, from regulating nuclear plants from a radiological standpoint, but that regulation for other purposes is permissible.<sup>60/</sup>

Based upon the above discussion, several conclusions must be drawn. First, the states are preempted, under both state law and the Clean Water Act, from exercising control over radioactive discharges from nuclear reactors to the receiving medium of water. The State and the Regional Boards, consequently, lack jurisdiction under the Porter-Cologne Water Quality Control Act [Porter-Cologne]<sup>61/</sup> and the Clean Water Act to regulate the release of radioactive wastewater from the Diablo Canyon Plant. To the extent that petitioners challenge Regional Board Order No. 82-24, as amended, on the grounds of the radiological hazards posed by such releases, whether planned or accidental, petitioners' contentions must be rejected.

A corollary conclusion is that concurrent regulation by the Regional Board of radioactive effluent from the Diablo Canyon

Plant has been precluded, even though such regulation is not in conflict with that of the NRC.<sup>62/</sup> We base this conclusion on the failure of the 1959 bill proposed by the AEC, which would have allowed concurrent regulation by the states of activities licensed by the AEC (now NRC) and the legislative history of the 1959 amendments to the Atomic Energy Act, which indicates a congressional intent to prohibit dual regulation of such activities by the states. This conclusion is also compelled by the language of the Northern States case, which was reaffirmed by the United States Supreme Court in Train v. Colorado. Finally, we note that the Clean Water Act, unlike the Clean Air Act, was amended in 1977 without any attempt by Congress to change the holding of Northern States in the context of radioactive discharges to water. Consequently, we find that PG&E's challenge to the radiation limits contained in Order No. 82-24, as amended, must be upheld.

Thirdly, we find that the 1977 amendments to the Clean Air Act allow the states to regulate the release of radiation from nuclear plants to the atmosphere. Further, Porter-Cologne establishes a program for the regulation of waste discharges that could affect water quality, which is broad enough to include regulation of gaseous waste discharges which could impair water quality.<sup>63/</sup> Nevertheless, we note that, traditionally, neither the State nor Regional Boards have ever exercised regulatory authority over emissions to the atmosphere, and that the Boards lack the technical expertise to regulate such emissions, radioactive or otherwise.

The California Legislature has established a program for the protection of air quality,<sup>64/</sup> which vests "primary responsibility for the control of air pollution from all sources other than

vehicular" in local and regional authorities.<sup>65/</sup> The State Air Resources Board (Air Board) has exclusive authority over vehicular emissions and has oversight authority over the local and regional entities responsible for air quality.<sup>66/</sup> In addition, the Air Board "is the state agency charged with coordinating efforts to attain and maintain ambient air quality standards and to conduct research into the causes of and solution to air pollution..."<sup>67/</sup> The Air Board is also designated as the state agency responsible for the preparation of the state implementation plan required by the Clean Air Act and, to this end, is directed to coordinate the activities of all districts necessary to comply with the Clean Air Act.<sup>68/</sup>

The local and regional air pollution control agencies and the Air Board have special expertise in the field of air pollution. Further, the local and regional entities have clear statutory authority to regulate air emissions from stationary sources, subject to the oversight authority of the Air Board. Given these factors, we conclude that it is proper for the State and Regional Boards to defer to the appropriate local or regional air pollution control authorities and to the Air Board with respect to the regulation of gaseous emissions to the atmosphere. Therefore, we hold that the Regional Board acted properly in declining to regulate such emissions from the Diablo Canyon Plant.

Finally, we wish to express our wholehearted support for the action of the Regional Board in communicating to the NRC their concerns regarding the release of radiation from the Diablo Canyon Plant. We also have reservations regarding the

levels of radioactive substances which will be discharged from the Diablo Canyon Plant, and we urge the NRC to closely monitor such discharges.

B. CEQA

Contention: Petitioner Laurence H. Frommhamen contends that the Regional Board erred in refusing to require PG&E to submit an environmental impact report, pursuant to the California Environmental Quality Act [CEQA], <sup>69/</sup> on the consequences of a major accident or seismic event on liquid pathways. Petitioners Joel Jaffer and Mothers for Peace argue that the Regional Board failed to comply with CEQA with regard to new discharges of secondary coolant steam vented for low-power testing or airborne radioactive releases during normal full-power operation at the Diablo Canyon Plant.

Finding: Petitioners' contentions must be rejected because Water Code Section 13389 <sup>70/</sup> exempts the State and Regional Boards from the requirement that environmental documents be prepared, pursuant to CEQA, prior to the issuance of an NPDES permit. <sup>71/</sup> This exemption is also contained in the CEQA Guidelines of the Resources Agency, which provide, in part:

"The State Water Resources Control Board and the regional boards are exempt from the requirement to prepare an Environmental Impact Report or a Negative Declaration prior to the adoption of waste discharge requirements, except requirements for new sources as defined in the Federal Water Pollution Control Act or in other acts which amend or supplement the Federal Water Pollution Control Act. The term 'waste discharge requirements' as used in this section is the equivalent of the term 'permits' as used in the Federal Water Pollution Control Act."<sup>72/</sup>

C. Section 316(b) of the Clean Water Act

Contention: Petitioner Joel Jaffer contends that Order No. 82-24, as amended, (Order No. 82-24) does not ensure compliance with Section 316(b) of the Clean Water Act.<sup>73/</sup> This section mandates that any effluent limitation or national standard of performance established pursuant to the Clean Water Act, which is applicable to a point source, "shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact."

Finding: Section 316(b) of the Clean Water Act is unique in that, unlike other provisions of the Act, it governs intake structure problems and not the discharge of pollutants. The purpose of Section 316(b) is to protect aquatic life in receiving waters adjacent to a power plant from unnecessary "entrainment"<sup>74/</sup> and "impingement"<sup>75/</sup> losses.<sup>76/</sup>

The Regional Board chose to implement Section 316(b) in this case by requiring PG&E to submit the results of studies necessary to demonstrate compliance with Section 316(b) within 36 months after the company begins commercial operation of the Diablo Canyon Plant.<sup>77/</sup> The study results will, therefore, be based upon actual performance of the intake structure.

The Regional Board's approach appears to be reasonable under the circumstances. We note that PG&E has already submitted a number of studies to the Regional Board, which are related to the intake structure of the Diablo Canyon Plant. The studies include the following subjects:

zooplankton entrainment mortality resulting from mechanical stress at the Diablo Canyon Plant,<sup>78/</sup> seasonal distributions of plankton and larval fish in the nearshore marine environment of the plant,<sup>79/</sup> delayed mortality of entrained copepods at Morro Bay,<sup>80/</sup> impingement of fishes and macroinvertebrates at the Diablo Canyon Plant,<sup>81/</sup> and ecological studies of the intake cove.<sup>82/</sup>

Based upon these studies and other data, PG&E predicts that losses due to impingement and entrainment due to operation of the Diablo Canyon Plant will be negligible.

Further, the Department of Fish and Game [Department] has been actively involved in studies at the Diablo Canyon site since at least 1971, and the Department has apparently not found fault with the intake structure design. The Department has, in fact, expressed an intent to participate in the 316(b) studies conducted by PG&E.<sup>83/</sup>

Obviously, the best time for a technological assessment of an intake structure is during design. The Diablo Canyon Plant intake structure has already been designed and constructed, however. Given this factor, the data available to the Regional Board, and the concurrence of the Department, we believe that the Regional Board acted properly in requiring PG&E to submit its Section 316(b) study after assessing actual performance of the intake structure.

We wish to make several observations about the conduct of the Section 316(b) study, however. A plan of study to comply with Section 316(b) was drafted by PG&E in 1977. At a minimum, the company should submit an updated plan of study to the Regional Board within 90 days of the date of this Order or before the start of commercial operation of the Diablo Canyon Plant, whichever is earlier.

The updated study plan should include a schedule for the submittal of progress reports to the Regional Board. In addition, the updated plan should be reviewed by the Regional Board and the Department of Fish and Game to ensure that it includes the best, present day, techniques for analysis and assessment of data.

Secondly, it should be emphasized that the 316(b) study should, in addition to evaluating the environmental impacts of the intake structure, include an evaluation of alternative technologies available to minimize any adverse environmental impacts which have been identified. We note that technological advances have occurred in the past several years, which might make possible economical retrofit opportunities for PG&E. For example, a coating has been developed, which acts as a hostile environment for mussel attachment. Application of this coating to the cooling water conduits might substantially reduce the need for periodic high-temperature demusseling discharges. Additionally, a floating boom in the intake cove could intercept seaweed which when lodged against the intake screen would increase the velocity of intake waters. Other concepts should also be investigated by PG&E.

#### D. Application of the Ocean Plan

Contention: PG&E objects to the toxic materials effluent limitations contained in B.l.b.<sup>84/</sup> of Order No. 82-24 on the grounds that the Regional Board failed to properly apply the State Board's "Water Quality Control Plan for Ocean Waters of California" (1978) [Ocean Plan]. Specifically, PG&E contends that the Regional Board improperly disallowed credit for dilution in formulating the B.l.b. effluent limitations. The company also objects to Finding No. 10 of Order No. 82-24, which provides part of the rationale

for the Regional Board's action. Additionally, PG&E objects to the B.l.b. effluent limitations on the grounds that the company will be required to perform more expensive monitoring.

Finding: For the reasons which will be explained infra, we conclude that the B.l.b. limits of Order No. 82-24 should be upheld as technology-based limits for operation of the Diablo Canyon Plant with either or both of the main circulating water systems. We also find that the less stringent, water quality-based standards of the Ocean Plan should be applied, when only the auxiliary saltwater cooling systems are operating, without flows from the main circulating water systems.

As mentioned previously, the Clean Water Act regulates the discharge of pollutants through the NPDES permit program. The objective of the Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."<sup>85/</sup> Toward this end, the Act declares that "it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985."<sup>86/</sup>

In order to carry out the objective of the Clean Water Act, Section 301<sup>87/</sup> requires that certain technology-based effluent limitations be achieved by specified dates. In particular, Section 301(b)(2)(A) and (C) provide that effluent limitations for specified toxic pollutants "shall require application of the best available technology economically achievable" [BAT] for categories and classes of point sources by not later than July 1, 1984.<sup>88/</sup>

Section 301 also requires that, by not later than July 1, 1977, "any more stringent limitations, including those necessary to meet water quality standards...established pursuant to any State law or regulations (under authority preserved by Section 570), or...required to implement any applicable water quality standard established pursuant to this Act" shall be

achieved.<sup>89/</sup> Water quality standards include standards adopted<sup>90/</sup> by the States and approved by EPA under Section 303 of the Act. Water quality standards consist of the designated uses of the receiving waters involved and water quality criteria based upon these uses.<sup>91/</sup>

An NPDES permit issued under Section 402(a)(1) of the Act must ensure compliance with any technology-based effluent limitations promulgated by EPA pursuant to Section 301 of the Act and with any more stringent limitations necessary to achieve applicable water quality standards, including standards established under Section 303.<sup>92/</sup> The technology-based limitations are considered "the minimum level of control that must be imposed in a permit under [S]ection 402 of the Act."<sup>93/</sup>

Section 402(a)(1) also provides that, prior to the adoption of effluent limitations by EPA, a permit shall include "such conditions as the Administrator determines are necessary to carry out the provisions of this Act." Pursuant to this provision, the Administrator, or a State if it has an approved permit program, is authorized to adopt technology-based effluent limitations on a case-by-case basis where EPA-promulgated effluent limitations are inapplicable.<sup>94/</sup>

In order to meet the July 1, 1984, deadline for achieving BAT for certain toxic pollutants, EPA regulations require that "[a]fter June 30, 1981, any permit issued shall include effluent limitations and a compliance schedule to meet [BAT] requirements... whether or not applicable effluent limitations guidelines have been promulgated or approved."<sup>95/</sup> If effluent limitation guidelines have not been approved, BAT limitations for toxic pollutants in permits issued after June 30, 1981, must be established

on a case-by-case basis in accordance with Section 402(a)(1) of the Act.<sup>96/</sup>

In establishing technology-based treatment requirements on a case-by-case basis, EPA regulations require the permitting authority to consider the appropriate technology for the category or class of point sources of which the applicant is a member and any unique factors relating to the applicant.<sup>97/</sup> In addition, the permit writer must consider the factors listed in Section 304 of the Clean Water Act. This section provides, in part, that:

"[f]actors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other <sup>98/</sup> factors as the Administrator deems appropriate...."

The Regional Board adopted Order No. 82-24 after June 30, 1981. Consequently, the Regional Board was required to incorporate effluent limitations for toxic pollutants in the Order to meet the BAT requirement. EPA had not yet promulgated BAT limitations for the steam electric power generating point source category<sup>99/</sup> so the Regional Board was required to establish toxic materials limitations meeting BAT requirements on a case-by-case basis, using the Regional Board's "best professional judgment."<sup>100/</sup>

The toxic materials limits adopted by the Regional Board in Order No. 82-24 for all constituents except phenolic compounds, total chlorine residual, ammonia, and toxicity concentrations, are the same as the water quality objectives for toxic materials contained in Table B of the State Board's Ocean Plan.<sup>101/</sup> The transcripts of the Regional Board hearings on the Diablo Canyon

permit and Findings 10 and 16 of Order No. 82-24 provide a dual rationale for the imposition of these limits, specifically, the Regional Board's interpretation of the State Board's Ocean Plan and the Regional Board's determination that the Table B limits constitute BAT.

The State Board's Ocean Plan contains water quality standards or objectives, in accordance with Section 303 of the Clean Water Act,

for the protection of the quality of ocean waters in California.

The Ocean Plan provides that the water quality objectives for toxic materials in Table B of the plan shall be implemented through effluent limitations "imposed in a manner prescribed by the State Board such that the concentrations set forth [in Table B of the plan] as water quality objectives, shall not be exceeded in the receiving water upon the completion of initial dilution...."<sup>102/</sup>

The Ocean Plan establishes a formula for determining the effluent limitations which takes into account minimum initial dilution expressed as parts seawater per part wastewater.<sup>103/</sup> The Ocean Plan further provides that the Regional Boards may impose more restrictive objectives and limitations than those set forth in the plan "as necessary for the protection of beneficial uses of the ocean."<sup>104/</sup>

The Regional Board record on the Diablo Canyon permit includes calculations by PG&E consultants of the minimum dilution for the discharge from the plant. The numbers range from 6.4 at high tide to 18.8 at low tide, for an average dilution of 12.<sup>105/</sup> The Regional Board concluded, however, that more stringent limits than limits based upon an application of the Ocean Plan with a 12 to 1 dilution were necessary. The Regional

Board, therefore, disallowed credit for dilution in calculating concentration limits for toxic materials in B.l.b. of Order No. 82-24. The Regional Board based this conclusion on "the large volume of the discharge, the low dilution at the exit of the cove, and the desirability of protecting beneficial uses within the cove."<sup>106/</sup>

Alternatively, Finding 16 of Order No. 82-24 states that the effluent limitations contained in B.l.b. "are based on limits aimed at maintaining discharges of metal as low as reasonably achievable." Finding 16 further states that "[b]est available technology economically achievable [BAT] for Diablo Canyon Power Plant should result in minimal discharge of heavy metals in the plant piping system and from other sources. Such quantities in many cases may be significantly less than State Ocean Plan allowable concentrations."

Based upon our review of the record, we have concluded that the B.l.b. limits in Order No. 82-24, with the exception of the limit for total chlorine residual which will be discussed below, are appropriate as technology-based limits for operation of the Diablo Canyon Plant when either or both of the main circulating water systems are operating. We, therefore, find it unnecessary to determine whether or not the Regional Board properly applied the Ocean Plan.

The Regional Board record indicates that most of the constituents listed in Table B of the Ocean Plan and contained in B.l.b. of Order No. 82-24 will be discharged from the Diablo Canyon Plant as a result of corrosion of pipes or the discharge of chemicals used to conduct laboratory analyses.<sup>107/</sup> The largest

surface area of the plant which is subject to corrosion by contact with seawater consists of the main condenser tubes.<sup>108/</sup> The main condenser tubes are titanium, which has such a low corrosion rate that PG&E does not anticipate ever being able to measure titanium in the cooling water discharge.<sup>109/</sup> Other materials exposed to seawater include the structural components of the intake facility and circulating water tunnels, which are constructed of reinforced concrete.<sup>110/</sup> The component cooling water heat exchangers and surface heat exchangers use copper-nickel alloy tubes.<sup>111/</sup> There are also minor amounts of carbon steel and some stainless steel tubes in the plant.<sup>112/</sup>

The actual quantities of toxic materials which the company will discharge are much smaller than those which might be allowed under an application of the Ocean Plan, which assumed a 12 to 1 dilution.<sup>113/</sup> For example, the company does not use cyanide or total chlorinated pesticides in the plant so none of these substances will be added to the cooling water discharge.<sup>114/</sup> Similarly, the company does not use mercury in the plant, and the company does not anticipate a discharge of mercury unless a thermometer or manometer in the plant breaks.<sup>115/</sup> No phenolic compounds or cadmium are used in the plant but trace amounts might be present as a result of analytical standards in the chemical laboratory.<sup>116/</sup> Arsenic is a minor contaminant of admiralty brass, and PG&E expects very trace amounts of this substance in the discharge.<sup>117/</sup> Chromium, nickel, copper, lead, and zinc will be discharged as a result of corrosion, but in concentrations which are very low.<sup>118/</sup>

Most of the plant operation will reflect steady-state conditions, and the corrosion rates of materials used in the plant are not expected to

change over the life of the plant.<sup>119/</sup> In this regard, PG&E anticipates that the discharge of heavy metals from the plant will be similar to discharges from other power plants.<sup>120/</sup> Typically, heavy metals in cooling water discharges from ocean-sited power plants are present in approximately the same concentrations as those found in ambient seawater.<sup>121/</sup> A study conducted in 1977, for example, by the Southern California Coastal Water Research Project on eight power plants in the Southern California Bight concluded that, even though the power plants were by far the largest dischargers to the Bight, their estimated annual input of heavy metals was a fraction of one percent of the total.<sup>122/</sup>

The Regional Board record also reflects that PG&E should be able to meet the toxic materials limits in B.l.b. of Order No. 82-24, excluding the limits for total residual chlorine, when the main circulating water systems of the plant are in operation. PG&E witnesses on several occasions stated that PG&E predicted that the company could meet the limits.<sup>123/</sup> Further, data included in the "Assessment of Alternatives to the Existing Cooling Water System" report indicates that the discharge concentrations allowed under B.l.b. are substantially greater than the concentrations of heavy metals which the company predicts will be discharged during normal operations.<sup>124/</sup> We, therefore, conclude that the B.l.b. limits in Order No. 82-24 are both technically and economically achievable by PG&E when the main circulating water systems of the plant are operated. Because we find that the B.l.b. limits are appropriate as B.A.T. limits under these circumstances, we also conclude that Finding 10 of Order No. 82-24 is unnecessary and should be deleted.

PG&E contends that the B.l.b. limits are improper as technology-based limits for several reasons. The discharger

maintains that the limits are inappropriate as BAT limits because the Regional Board did not consider any particular technology in establishing the limits. In addition, PG&E contends that EPA's determination that arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc are present in once-through cooling water and low volume wastewaters from steam electric power plants "in amounts too small to be effectively reduced by technologies known to the Administrator" should be conclusive.

Subsequent to the adoption of Order No. 82-24, EPA published BAT limits for the steam electric power generating point source category.<sup>125/</sup> Most of the constituents listed in Table B of the Ocean Plan were excluded from regulation because EPA determined that these substances are present in once-through cooling water and low volume wastewater in amounts too small to be effectively reduced by technologies known to the Administrator.<sup>126/</sup>

We do not believe, however, that the failure of EPA to establish BAT limits for most of the constituents in B.l.b. of Order No. 82-24 invalidates the limits established by the Regional Board. As explained previously, no EPA-promulgated BAT limits were in effect when the Regional Board adopted Order No. 82-24, and the Regional Board was required to include BAT limits in the permit. The Regional Board, therefore, had to establish such limits on a case-by-case basis.

Further, we can find nothing in the Clean Water Act or implementing regulations which would support the contention that we or the Regional Board are bound by EPA's subsequent failure to regulate certain constituents. Rather, the EPA regulations authorize

the imposition of technology-based limits "to the extent that EPA-promulgated effluent limitations are inapplicable."<sup>127/</sup> Further, when EPA published BAT regulations for the steam electric power plant category, EPA commented that "even if this regulation does not control a particular pollutant, the permit issuer may still limit such pollutant on a case-by-case basis when limitations are necessary to carry out the purposes of the Act."<sup>128/</sup>

We also find that the Regional Board's action was consistent with the subsequent EPA determination that there are no known technologies to reduce the extremely small quantities of heavy metals present in steam electric power plant discharges. The B.l.b. limits established by the Regional Board do not require PG&E to reduce the heavy metal concentrations normally present in discharges from the Diablo Canyon Plant during commercial operation. Rather, the record reflects that the Regional Board intended the limits to more closely reflect the actual levels of heavy metals which will be discharged during normal operation of the plant, than would limits based upon an application of the Ocean Plan which assumed a 12 to 1 dilution.<sup>129/</sup>

Further, we conclude that the B.l.b. limits are appropriate as technology-based limits even though no treatment should be required to meet the limits. Technology-based limits need not be based upon a particular treatment method but can, for example, be based upon process changes.<sup>130/</sup> We believe that it was appropriate for the Regional Board to impose, as technology-based limits for the Diablo Canyon Plant, limits which reflect what a well-run, properly operated and maintained, steam electric power plant, constructed with the types of materials previously referenced, can achieve.

PG&E also contends that the discharger's ability to meet more stringent limits than those required by a strict application of the Ocean Plan is irrelevant, citing the case of Southern California Edison Co. v. State Water Resources Control Board [Southern California Edison.]<sup>131/</sup> In this case the court held that a Regional Board can impose more stringent water quality-based limits than those contained in the Ocean Plan only on the basis of evidence in the record that such limits are "necessary for the protection of beneficial uses of the ocean."<sup>132/</sup>

The Southern California Edison case is not applicable here. The limits contained in the permit in question for Southern California Edison were water quality standards, based upon the Ocean Plan. We have concluded that the B.l.b. limits in Order No. 82-24 are appropriate as technology-based limits under the Clean Water Act, rather than as water quality standards under the Ocean Plan. As discussed above, the Clean Water Act and EPA regulations required the Regional Board to incorporate BAT limits into the Diablo Canyon Plant. To the extent that those limits are more stringent than limits based upon the water quality standards of the Ocean Plan, the technology-based limits would govern.<sup>133/</sup> Under Water Code §13372, we note that, in the event that there is any conflict between the requirements of the Clean Water Act or EPA regulations and the Porter-Cologne Act, the requirements of federal law are controlling.

PG&E further contends that it cannot meet the B.l.b. limits. As stated previously, our review of the record indicates that PG&E should have no difficulty meeting the B.l.b. limits, excluding the chlorine limits, when either or both of the main

circulating water systems are operated. The record also indicates, however, that PG&E may have difficulty meeting the limits when only the auxiliary saltwater cooling systems are operated, without the main circulating water systems.<sup>134/</sup> We conclude that the limits cannot be upheld as BAT limits under these circumstances because they may not be achievable.

As an alternative to the B.l.b. limits for discharges from the auxiliary saltwater cooling systems only, we conclude that the discharger should, at a minimum, comply with the toxic materials standards in Table B of the Ocean Plan, applying an appropriate dilution factor. We have calculated a 4 to 1 dilution factor for discharges from the auxiliary saltwater cooling systems, when the main circulating water systems are not operating.<sup>135/</sup> Revisions to Order No. 82-24, which include effluent limitations based on the above findings, are contained in Attachment 2 to this Order.<sup>136/</sup>

In sum, we find that the Regional Board record supports the application of the B.l.b. limits in Order No. 82-24, as technology-based limits, for operation of the Diablo Canyon Plant with the main circulating water systems. The B.l.b. limits may not be achievable, however, when only the auxiliary saltwater cooling systems are operated. Consequently, the Ocean Plan standards, with a 4 to 1 dilution factor, should be applied to these operations.

Although we have concluded that the B.l.b. limits are appropriate as BAT limits when the main circulating water systems are operating, these limits should be amended by the Regional Board if PG&E can demonstrate, based upon data from actual operations, that the limits are not achievable and that all reasonable actions have been taken in an effort to meet the limits. In this case,

the limits should be amended by the Regional Board to reflect what can be achieved. In no event, however, should limits be imposed which are less stringent than the requirements of the Ocean Plan, as implemented in accordance with Footnote 10 of the plan and with dilution values that reflect the dilution "when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste."<sup>137/</sup>

Finally, PG&E objects to the Regional Board's failure to allow credit for dilution in calculating the Effluent Limitations in B.l.b. of Order No. 82-24 on the grounds that the limitations will necessitate a more expensive monitoring program. PG&E contends that, because no credit has been allowed for dilution of the discharge stream with ocean waters, many of the limits contained in B.l.b. are below detectable levels. As a consequence, PG&E will be able to ensure compliance with these limits, in some cases, only by monitoring the low-level waste streams entering the cooling water stream. If the levels in B.l.b. were higher, on the other hand, one sample of the cooling water stream might suffice.

Our comparison of the monitoring program contained in PG&E's 1976 permit with that in Order No. 82-24, as amended on June 11, 1982,<sup>138/</sup> indicates that additional costs will be incurred by the company; however, we do not consider these costs to be unreasonable.<sup>139/</sup> Further, we believe that an extensive monitoring program for the Diablo Canyon Plant is appropriate, initially, in order to verify plant operations. After experience is gained in actual operations, the Regional Board should review the monitoring

frequency of waste streams with a history of "clean" discharges, analysis of a composite sample, flow weighted to the individual waste streams, or a combination of the two.

E. Chlorine Limitation

Contention: PG&E contends that, even if the remaining effluent limitations in B.l.b. of Order No. 82-24 are upheld, the limitation on the daily maximum concentration for chlorine must be revised. PG&E asserts that this revision is necessary because the Regional Board indicated during the hearings on the Diablo Canyon permit that the daily maximum concentration for total chlorine residual in B.l.b. of .1 mg/l could be calculated as a 24-hour average; however, B.l.c. of Order No. 82-24<sup>140/</sup> states that the daily maximum total chlorine residual "shall not be maintained for longer than 30 minutes per day per generating unit." PG&E requests that the daily maximum concentration for chlorine be relaxed from .1 to .3 mg/l.

Finding: Our review of the record indicates that a daily maximum chlorine concentration of .1 mg/l is not presently achievable for the Diablo Canyon Plant discharge. Each generating unit of the Diablo Canyon Plant has two condensers. Only one condenser can be chlorinated at a time. PG&E anticipates a maximum chlorine residual concentration of .5 mg/l in the flow from the condenser being chlorinated. With one or both units operating, the concentration of chlorine in the discharge is expected to be approximately 0.25 mg/l. This concentration exceeds the permissible concentration of .1 mg/l in B.l.b. of Order No. 82-24. It also exceeds the BAT limit for total chlorine

residual, which was promulgated by EPA in November, 1982, of  
.2 mg/l.<sup>141/</sup>

The EPA-limit must be achieved no later than November 19,  
1985.<sup>142/</sup> PG&E has requested that a daily maximum concentration  
of .3 mg/l for total residual chlorine be applied in the interim  
until November 19, 1985.

We conclude that a daily maximum concentration of .3 mg/l  
would be appropriate as an interim limit. This concentration  
would, at a minimum, comply with the water quality standards of  
the State Board's Ocean Plan.

Limiting concentrations for intermittent discharges of  
total residual chlorine are derived from a formula in Footnote 11  
of the Ocean Plan. The formula establishes water quality objec-  
tives for total residual chlorine based upon the duration of  
chlorination. The permissible receiving water concentrations  
increase as the duration of chlorination decreases.

For a chlorination period of 30 minutes, as authorized  
in B.l.c. of Order No. 82-24, the Footnote 11 formula establishes  
a maximum receiving water concentration of 0.041 mg/l. With one  
or both units operating, the maximum discharge concentration over  
30 minutes would be approximately 0.2 to 0.25 mg/l. Using the  
average dilution factor of 12 and a discharge concentration of  
0.3 mg/l, the resulting receiving water concentration would be  
0.023 mg/l., well within the 0.041 mg/l Ocean Plan requirement.  
The discharger intends to chlorinate each condenser of each unit  
for 10 minutes each day, or 20 minutes per unit. In this situ-  
ation, the Ocean Plan calls for a maximum receiving water concen-  
tration of 0.058 mg/l, a clearly attainable level with a 0.3 mg/l  
chlorine discharge.

The revised effluent limitations contained in Attachment 2 to this Order, therefore, include chlorine limits in accordance with the above findings. Attachment 2 also includes a schedule to ensure compliance by November 19, 1985, with the EPA-promulgated BAT limit of .2 mg/l. The schedule requires PG&E to achieve full compliance by 12 months of the start of commercial operation, if a chlorine minimization program is successful, or 18 months after the start of commercial operation, if an alternative technology is necessary, or November 19, 1985, whichever is earlier.

F. Four-Year Duration of Permit

Contention: PG&E asserts that the Regional Board improperly limited the duration of Order No. 82-24 to four years.

Finding: Provision D.13 of Order No. 82-24 provides an expiration date for the permit of January 1, 1986, or four years after permit issuance. The Clean Water Act and EPA regulations provide that NPDES permits shall be effective for a fixed term not to exceed five years.<sup>143/</sup> The regulations further provide that permits may be issued "for a duration that is less than the full allowable term."<sup>144 /</sup>

This Board concludes that the Regional Board acted properly in limiting the duration of Order No. 82-24 to four years. We note the enormous volume of the discharge and the variables surrounding the thermal and other impacts of the discharge. Given the Regional Board's concerns regarding the impact of the discharge on the beneficial uses of the waters of Diablo Cove and the ocean, limiting the duration of Order No. 82-24 appears to be reasonable.

G. Discharge of Mercury

Contentions: Petitioners Judith Evered and P.O.I.S.E. object to Order No. 82-24 on the ground that the permit will allow the discharge of approximately one ton of mercury a year to the

ocean. They allege that this quantity will be harmful to human and aquatic life.

Finding: Petitioners' assertion that Order No. 82-24 will allow the discharge of one ton of mercury per year is incorrect. Based on a discharge of 2.67 billion gallons per day for normal, commercial operation and a six-month median mercury concentration of .00014 mg/l, specified in B.l.b. of Order No. 82-24, PG&E could theoretically discharge a maximum of 1,138 pounds of mercury per year from the Diablo Canyon Plant. As a practical matter, PG&E anticipates that the only discharges of mercury from the plant, other than background levels of mercury already present in seawater, will be the result of accidental breakages of thermometers or manometers and the discharge of laboratory chemicals. Further, the permissible mercury concentrations specified in B.l.b. of Order No. 82-24 do not exceed Ocean Plan standards and should ensure protection of ocean water quality.

H. Discharge of Copper

Contention: Petitioner Judith Evered objects to Order No. 82-24 on the grounds that the permit allegedly authorizes the discharge of lethal quantities, approximately 1 gram per liter, of copper during metal cleaning operations.

Finding: Petitioner's contention cannot be substantiated. For normal, commercial operation, Order No. 82-24 contains the following effluent limitations for copper:

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"B. Effluent Limitations

1. Discharge 001

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b. Effluent discharge shall not exceed the following limits:

	Concentration, mg/l (except as noted)		
	<u>6-Month Median</u>	<u>Daily Maximum</u>	<u>Instantaneous Maximum</u>
		* * *	
Copper	0.005	0.020	0.05
		* * *	

3. Discharge 001D, 001F, 001I and 001L:

When metal cleaning operations occur on these waste streams, effluent concentrations shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Daily Maximum</u>
Copper, total	mg/l	1.0"

It is clear that permissible concentrations of copper in the main cooling water discharge (001), under B.1.b., are far less than 1 gram per liter. B.3 allows the concentration of copper in certain side streams which discharge into 001 to reach 1 mg/l. These side streams are diluted in the main cooling water stream by a factor of about 100, if both generating units are operating, or 50, if only 1 unit is operational. This dilution ensures that the copper concentrations specified in B.1.b. for the main cooling water discharge are not exceeded. As with the mercury limits, we note that the B.1.b. limits for copper do not exceed Ocean Plan standards and should ensure protection of beneficial uses.

Parenthetically, we note that PG&E is not required to monitor copper levels in Discharge 001B, the auxiliary salt water

cooling system. At 32 million gallons per day, this is the largest side stream flowing into 001. To verify that copper levels in 001B are insignificant, we conclude that an annual grab sample should be analyzed for copper in this side stream.

I. Discharge of Arsenic, Cadmium, Chromium, and Nickel

Contention: Petitioners Judith Evered and P.O.I.S.E. also question the propriety of allowing the discharge of such substances as arsenic, cadmium, chromium and nickel by PG&E from the Diablo Canyon Plant.

Finding: The effluent limitations for arsenic, cadmium, chromium and nickel in B.l.b. of Order No. 82-24 for normal, commercial operation are exactly the same as the permissible receiving water concentrations under Table B of the Ocean Plan. <sup>145/</sup>

The permissible total mass emissions in pounds for these substances on a yearly basis are as follows:

Pounds/yr.

Arsenic -- 65,000

Cadmium -- 24,000

Chromium -- 16,000

Nickel -- 160,000

While the petitioners have substantially overestimated the quantities of arsenic, cadmium, chromium and nickel which can be discharged, the actual permissible mass emissions for these elements are large and warrant further examination. We will, therefore, consider each element.

(1) Arsenic: Arsenic is used in metallurgy to increase hardening and heat resistance. Arsenic is a minor contaminant

in admiralty brass. The average concentration of arsenic in seawater is 0.003 mg/l.

Arsenic will be present in very small amounts in the Diablo Canyon Plant discharge as a result of corrosion in the pipes. PG&E estimates that the addition of arsenic from plant operations will be the same as the seawater concentration. This concentration (0.003 mg/l) is well below the detection level for arsenic of 0.053 mg/l.

Theoretically, the Regional Board's effluent limitations for arsenic could be made more stringent based upon PG&E's predictions. However, to further decrease the arsenic limitations would be academic because of the detection limit constraint.<sup>146/</sup>

Order No. 82-24 requires grab samples for arsenic from the main cooling water stream. In order to verify PG&E's predictions regarding arsenic levels, it appears that monitoring for arsenic in side streams would provide more useful data. We, therefore, conclude that, in addition to the grab samples from the main cooling water discharge, a sample composed of grab samples of all contributing side stream discharges, should be analyzed on an annual basis.

(2) Cadmium: Cadmium is used in metallurgy to alloy with copper, lead, silver, aluminium, and nickel. It is also used in nuclear reactors. Cadmium acts synergistically with other substances to increase toxicity.

PG&E estimates that the concentration levels for cadmium in the main cooling water discharge from the Diablo Canyon Plant will be below detectable levels. Additionally, PG&E predicts the instantaneous maximum in all side streams will be .0016 mg/l; and in the main cooling water discharge, .00003 mg/l. At these

extremely low concentrations, any synergistic effect from cadmium reacting with other substances would be tenuous at best.

Cadmium is monitored in the main cooling water discharge and in four side streams (001D, 001F, 001H, and 001L). The side streams samples are composite samples, which should provide data to substantiate the discharger's predictions. As with arsenic, the predicted discharge concentration of cadmium into Diablo Cove is expected to be below the detection limit at all times. Further, the actual mass emission rate of cadmium will be significantly less than that which is permitted under Order No. 82-24, using the allowable discharge concentrations specified in B.l.b. In summary, we have found no evidence to suggest that the permit limitation on cadmium is not appropriate.

(3) Chromium: The Diablo Canyon Plant has massive amounts of stainless steel, a chromium alloy steel. Potassium chromate and dichromate are also used as corrosion inhibitors in closed cooling water systems. Minor leakages, in concentrations of approximately .00001 mg/l, will eventually be released from the plant. Additional chromium might be discharged from the laboratory.

The expected mass emission of chromium from all sources is 325 pounds per year. Like the arsenic and cadmium levels, this low mass emission level will present detection problems. To verify the expected mass emission of chromium, this constituent will be monitored periodically in the main cooling water discharge and in four side streams, 001D, 001F, 001H and 001L.

The Ocean Plan standard for chromium is about 50 times more conservative than EPA's quality criteria for marine waters. <sup>147/</sup>  
The expected discharge level of chromium from the Diablo Canyon

Plant is another 50 times less than the Ocean Plan standard. As with other constituents, we have found no information to suggest that the permit limitation for chromium is improper.

(4) Nickel: Nickel will be present in the Diablo Canyon Plant discharge as a result of corrosion in the copper-nickel tubes. The main condenser tubes are titanium; consequently, practically all of the nickel in the discharge will originate in side streams.

The discharger estimates that the average concentration of nickel in side streams is 0.007 mg/l and in the main cooling water discharge, 0.00012 mg/l. On a mass emission basis, this amounts to about 975 pounds of nickel per year. These very low emissions will be difficult to detect. In order to verify these estimates, nickel will be monitored periodically in the main discharge and in four side streams, 001D, 001F, 001H, and 001L.

To conclude, we have found no evidence to suggest that the permit limitations for arsenic, cadmium, chromium, or nickel are improper. We further find that, in addition to the grab sample for arsenic, a composite sample composed of grab samples of all contributing side stream discharges should be analyzed on an annual basis.

#### J. pH Levels

Contention: Petitioner Judith Evered contends that the pH levels specified in Order No. 82-24, ranging from 6.0 to 9.0, will be harmful to the mussel population.

Finding: Although Effluent Limitation B.1.a. of Order No. 82-24 provides that "[e]ffluent discharged shall not have a pH of less than 6.0 nor more than 9.0", more stringent limitations

on pH are included in the order. Specifically, B.l.a. also states that "the pH of the discharge shall not vary more than 0.2 units from that of the intake water", and Receiving Water Limitation C.7 mandates that "[w]aste discharges shall not individually or collectively cause the pH in the ocean waters to be changed more than 0.2 units from that which occurs naturally." These more stringent limitations would govern the discharge of pH from the Diablo Canyon Plant. Further, compliance by the discharger with these limitations should not adversely affect the mussel population.

K. Thermal Limits

Contention: Several of the petitioners, including P.O.I.S.E. and Mothers for Peace object to Order No. 82-24 on the grounds that the thermal limits are improper. Specifically, P.O.I.S.E. contends that thermal pollution resulting from the discharge will "shock the ecosystem and kill marine life."

Mothers for Peace alleges generally that the thermal limits are excessive.

Finding: As discussed previously, the issuance of an NPDES permit must ensure compliance with any EPA-promulgated effluent limitations or standards. In addition, the permit must ensure compliance with any more stringent state standards. <sup>148/</sup>

Section 316 of the Clean Water Act governs thermal discharges. It provides, in part, as follows:

"(a) With respect to any point source otherwise subject to the provisions of section [301] of this title or section [306] of this title, whenever the owner or operator of any such source, after opportunity for public hearing, can demonstrate to the satisfaction of the Administrator (or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent

limitations more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made, the Administrator (or, if appropriate, the State) may impose an effluent limitation under such sections for such plant, with respect to the thermal component of such discharge (taking into account the interaction of such thermal component with other pollutants), that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water."

On October 8, 1974, EPA promulgated regulations for the steam electric point source category, <sup>149/</sup> which included limitations addressing thermal pollution. The regulations specified that BAT for this category would essentially require that there be no discharge of heat after July 1, 1981, except for heat from the cold side blowdown of closed-cycle cooling systems. <sup>150/</sup> Exceptions to the prohibition could be granted, under section 316(a) of the Clean Water Act, if a study demonstrated that the prohibition was more stringent than necessary to assure protection of fish and aquatic life. Accordingly, when the Regional Board renewed the NPDES permit for Diablo Canyon in April, 1976, the Order included a prohibition against the discharge of heat after July 1, 1981, unless PG&E could demonstrate, through a §316(a) study, that <sup>151/</sup> the prohibition was unnecessarily stringent.

In July, 1976, the United States Court of Appeals for the Fourth Circuit voided the thermal effluent limitations for the steam electric point source category. <sup>152/</sup> In essence, the Court found inadequate EPA's evaluation of the benefits, in light of the costs, of the regulations. EPA has failed to promulgate new thermal limitations for this point source category.

In the absence of EPA-promulgated thermal limitations, the discharge of elevated temperature wastes into coastal waters

must, at a minimum, comply with the provisions of the State Board's "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (1975) [Thermal Plan].<sup>153/</sup> The Thermal Plan distinguishes between existing and new thermal discharges into coastal waters, and the plan defines the Diablo Canyon Plant discharge as an existing discharge.<sup>154/</sup> The Thermal Plan establishes a maximum temperature for new discharges of thermal wastes into coastal waters of 20°F over ambient.<sup>155/</sup> However, existing discharges are subject to only the following requirement:

"Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance."<sup>156/</sup>

When the Regional Board reissued the Diablo Canyon Plant permit in 1982, the Regional Board deleted the thermal discharge prohibition contained in the 1976 permit and substituted the following provisions in Order No. 82-24:

"B. Effluent Limitations

1. Discharge 001

\* \* \*

- g. The temperature measured at the point of discharge shall not exceed 20°F over that of the intake except during heat treatment.
- h. During discharge of heat treatment effluent from Unit 1, Unit 2 circulating water pumps shall be operated at full capacity with no commercial load. Temperature measured at the point of discharge of Unit 1 shall not exceed 100°F.

\* \* \*

C. Receiving Water Limitations

(Receiving water quality is a result of many factors, some unrelated to the discharge. This permit considers these other factors, and is designed to minimize the adverse influence of the discharge in the receiving water).

1. Elevated temperature wastes shall not adversely affect beneficial uses.

\* \* \*

D. Provisions

\* \* \*

6. Prior to commercial operation of Unit 2, PG&E shall evaluate alternative demusseling programs and propose to the Board its method to reduce heat treatment at the point of discharge of both Units to 86°F.
7. Within 36 months after beginning commercial operation, the discharger shall submit results of:
  - (a) Thermal Effects Study to determine whether a thermal discharge in compliance with this Order adequately protects beneficial uses of receiving waters."

The issue is whether these provisions are appropriate under all of the circumstances of this case.

Our review of the record indicates that discharges from the Diablo Canyon Plant will produce the most severe thermal impact on the receiving waters when both units are in operation and during heat treatment for demusseling. These impacts will be more severe during the warm oceanic period, which ranges from August to January. A discussion of thermal impacts during two-unit operation and demusseling follows:

(1) Two-Unit Operation

As explained previously, the Diablo Canyon Plant has a once-through cooling system, which utilizes seawater to cool the main condensers. Seawater is drawn from an intake structure, pumped uphill to the power plant, and passed through the main condensers. The seawater picks up heat in the main condensers and then flows by gravity to a discharge structure located on Diablo Cove. The

cooling water discharge temperature is about 20° warmer than the incoming seawater temperature.

A vast amount of data has been generated by PG&E to define the thermal impact of the plant under steady state, two-unit operations. In particular, the company has undertaken extensive plume dispersal model studies and thermal stress studies on marine life to predict thermal impacts from the Diablo Canyon Plant discharge. Biologists from the Department have been involved in these studies.

Our review of the PG&E studies reveals that the discharge of thermal wastes from the Diablo Canyon Plant will significantly alter the quality of waters in Diablo Cove. A risk analysis was included in the report submitted by PG&E to the Regional Board entitled "Thermal Discharge Assessment Report" (March 30, 1982) and is summarized below for important species.

<u>Species</u>	<u>Risk</u>
Iridescent Seaweed	During the warm oceanic season, one-third of the cove's population will be at risk. The species will be at risk at temperatures of 71°F or higher (71°F isotherm).
Bull Kelp	During the six-month warm oceanic season, over 75 percent of the cove's population will be at risk (64°F isotherm).
Surfgrass	During the warm oceanic season, 30 percent of the cove's population may be at risk (77°F isotherm).
Rock Crab	During the warm oceanic season, 25 percent of the cove area would not be suitable for this species (76°F isotherm).

Black Abalone

During the warm oceanic season, the 79°F isotherm will endanger populations. This isotherm is not expected to occur; however, occasional warm seasonal peaks could cause mortality. Additionally, the thermal effect and flushing of the cove by the discharge could limit the population by reducing the amount of seaweed necessary for growth.

Red Abalone

During the warm oceanic season, one-third of the cove's area would not be suitable for this species (73°F isotherm). As with the black abalone, reductions in cove seaweed caused by the discharge could further reduce the population. A potential 75 percent reduction in bull kelp, which is the principal food of the red abalone, will contribute to a less hospitable environment for this species.

Blue Rockfish

During the warm oceanic season, the 72°F isotherm at a depth greater than 15 feet will not be suitable for this species. The species is mobile and should avoid this small area of the cove.

Cabezan

During the warm oceanic season, one-third of the spawning area will be unsuitable for this species (75°F isotherm). A small area will be unsuitable for adult species.

The fact that the species listed above will suffer reductions in population during the warm oceanic season does not necessarily mean that these species will become reestablished during the cold season. The impacts during the warm season will likely have repercussions during the cold season. Furthermore, PG&E's "Thermal Discharge Assessment Report" concentrated on the thermal effects of the discharge on each species. Cumulative impacts on species caused by increases or decreases in food, predators, and habitat as a result of thermal discharges are not as well understood.

(2) Heat Treatment for Demusseling

Periodically, each cooling water system at the Diablo Canyon Plant must undergo heat treatment to demussel and minimize the growth of fouling organisms in the cooling water conduits.<sup>157/</sup> Heat treatment for demusseling is expected to occur at the Diablo Canyon Plant on an average of once per month for each of the four condensers, or approximately once a week. The discharge volume from the unit being demusselled is approximately 25 percent of normal (500 cfs versus 2,000 cfs), and the demusseling discharge temperatures are expected to range from 86 to 100°F, or about 50° over ambient temperatures. The heat treatment process lasts approximately four hours -- two hours are required to raise the water temperatures in the area being treated to a maximum of 110°F and two hours are required to return to normal operating temperatures.

Physical model studies were conducted by the University of California at Berkeley on behalf of PG&E to establish the temperature contours of the thermal plume during heat treatment.

The physical model studies revealed that the most significant difference between two-unit operations and heat treatment will be in the horizontal spread of heat in the top six feet of surface water in Diablo Cove. During demusseling, practically all of Diablo Cove, within the top two feet of surface water, will be elevated 10.8°F in temperature. During normal two-unit operations, only half of the cove will reach comparable temperatures. At the minus 5.6 feet level, three-fourths of the cove will be elevated 7.2°F in temperature, as a result of demusseling (as compared to half of the cove during normal two-unit operations).

Very little research has been conducted on the effects of high-temperature, short-duration exposures on the marine species indigenous to Diablo Cove. <sup>158/</sup> One study conducted in 1973 reported that 90 percent of the red abalone survived when exposed to 91.4°F temperatures for the same period. <sup>159/</sup> On the other hand, all fish, except the rock prickleback, can avoid lethal temperatures as long as they are not "boxed in". Rock prickleback inhabit the undersides of boulders in the intertidal zones and are less likely to move away from the high temperature water.

### (3) Conclusions

Based upon our review of the record, we have concluded that the discharge of thermal wastes from the Diablo Canyon Plant, from normal two-unit operation and heat treatment, will significantly alter the quality of waters in Diablo Cove. For the following reasons, we also conclude that this alteration of water quality is not unreasonable. <sup>160/</sup>

Initially, we note that the Porter-Cologne Act recognizes that a balancing process must occur in the regulation of activities and factors which may affect water quality. In this regard, the

Act includes a legislative finding "that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."

(Emphasis added.)<sup>161/</sup> In addition, the Act recognizes that "it may be possible for the quality of water to be changed by some degree without unreasonably affecting beneficial uses."<sup>162/</sup>

Secondly, the State Board has adopted a policy, entitled "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling" (June 19, 1975), which establishes a preference for the use of ocean, rather than inland, waters for powerplant cooling. The basis for this preference is explained in the policy as follows:

"Although many of the impacts of coastal powerplants on the marine environment are still not well understood, it appears the coastal marine environment is less susceptible than inland waters to the water quality impacts associated with powerplant cooling. Operation of existing coastal powerplants indicate [sic] that these facilities either meet the standards of the State's Thermal Plan and Ocean Plan or could do so readily with appropriate technological modifications. Furthermore, coastal locations provide for application of wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State's limited supply of inland waters. These technologies include once-through cooling which is appropriate for most coastal sites, potential use of saltwater cooling towers, or use of brackish waters where more stringent controls are required for environmental considerations at specific sites."<sup>163/</sup>

A third consideration is the fact that the Department has been involved in studies of the aquatic life in Diablo Cove for at least ten years, and the Department has concluded that the predicted changes in Diablo Cove are acceptable. The Department has expressed the opinion, with which we concur, that

several of the provisions of Order No. 82-24 should prevent or alleviate any long-term damage to Diablo Cove. These include Receiving Water Limitation C.1. which mandates that "[e]levated temperature wastes shall not adversely affect beneficial uses" and Provision D.7.(a), which requires PG&E to submit a thermal effects study to determine whether the thermal discharge adequately protects beneficial uses. The permit is also subject to a condition authorizing modification or termination of the permit for cause. <sup>164/</sup> Should the thermal effects study reveal that the present thermal limits contained in Order No. 82-24 are inadequate to protect beneficial uses, the Regional Board has ample authority to modify or revoke the permit.

Additionally, as the Department observed, any adverse impacts caused by the thermal discharge would be reversible. The discharge occurs at about the midpoint of a 12-mile reef. Reestablishment of the cove to its natural state would be possible in a relatively short period of time.

We also note that Diablo Cove has not been designated as an Area of Special Biological Significance [ASBS] by the State Board. An inference can be drawn that some biological change in the cove would, therefore, be permissible under the Board's policy on ASBS. <sup>165/</sup> In addition, the State Board's Thermal Plan recognizes that some change may be appropriate. As explained previously, the Thermal Plan establishes a thermal limit for new discharges into coastal waters of 20°F over ambient. Presumably, thermal limits for existing discharges would normally be less stringent than those for new discharges because of the difficulties of retrofitting an existing source of thermal discharge to meet more stringent limitations.

We also observe that PG&E has been issued permits by the Regional Board since 1969, which allowed the discharge of thermal wastes from a once-through cooling system. The plant has now been constructed at a cost of \$2.4 billion. The company has assessed alternatives to the existing once-through cooling system, which would reduce the volume and heat of the discharge; however, the alternatives are very costly and in some cases, have additional negative environmental impacts. <sup>166/</sup>

Finally, we note that the thermal limits in Order No. 82-24 are not excessive when compared to the limits applicable to other coastal powerplants. <sup>167/</sup> In summary, this Board concludes that the existing provisions of Order No. 82-24 regulating the discharge of heat are proper. Further, the Board believes that the thermal effects study required under Order No. 82-24 and related monitoring will provide needed data on the actual thermal impacts of the discharge. It is appropriate for the Regional Board to wait until this data is available before determining whether the impacts are unreasonable, and whether remedial action should be undertaken by the company.

With respect to heat treatment for demusseling, some additional observations are appropriate. Provision D.6. of Order No. 82-24, quoted above, requires PG&E, prior to commercial operation of Unit 2, to evaluate alternative demusseling programs and propose to the Regional Board a method to reduce the heat treatment discharge from both units to 86°F. We note that during most of the year, the nearshore ocean current moves from north to south along the coast. During December and January, the Davidson Current predominates, moving from south to north. While the

southern half of Diablo Cove is at risk most of the year, the northern half appears to be at risk only when the Davidson Current occurs. To safeguard this area, various operations, such as heat treatment and planned preventative maintenance downtime, might be scheduled to correspond with seasonal occurrences.

Even on an hourly basis, with different tide conditions a demusseling heat treatment discharge can have different impacts. At low tide, the shallow subtidal communities will be exposed, whereas at high tide the intertidal communities would be exposed. These differences, and the stage of life of various species, should be recognized and accounted for in the scheduling of plant operations.

The discharger has agreed to study the frequency, duration, and temperature of demusseling operations in accord with results of studies being conducted at the site. Specifically, we conclude that the study referenced in D.6. of Order No. 82-24 should be expanded to include consideration of factors such as those mentioned above.

L. Interaction of Heavy Metals With Radiation

Contention: Petitioner Jonathan R. McHugh objects to Order No. 82-24 on the grounds that the Regional Board erred in failing to investigate the effects on human health of the interaction of heavy metals and the interaction of heavy metals and radiation. He also contends that the Table B limits in the Ocean Plan should be revised for discharges which combine heavy metals and radiation.

Finding: With respect to the alleged interaction of radioactive substances and other toxic materials, we are of the opinion that the States could consider any synergistic effect between these substances in regulating toxic materials, other than radioactive substances. Although the States may be preempted from regulating the discharge of radioactive wastes to waters, the States clearly can regulate the discharge of other toxic materials, such as heavy metals. It appears that the States could establish effluent limitations for toxic materials, other than radiation, which took into account any synergistic effect between those materials and radioactive substances. Data on such synergistic effects, if any, are presently lacking, however.

From a technical standpoint, we are not aware of any investigation of the combined effects of radioactive releases with toxic materials in the concentrations specified in Table B of the Ocean Plan. This type of investigation appears to be a second generation of research away from the present state of the art. Because this issue is common to all nuclear powerplants, it appears that the NRC would be best equipped to address it. Certainly, when reliable data is available on this subject, the State Board may need to consider the propriety of revising the Table B limits for discharges which contain radiation.

With respect to the interaction of the toxic materials in Table B of the Ocean Plan, we are not aware of any study of the effects on marine life of a combined mix of all of the Table B constituents at the maximum levels specified in the Ocean Plan. <sup>168</sup> Nevertheless, we note that PG&E has contracted with this Board to include the Diablo Canyon Plant discharge in the State Board's

Mussel Watch Program. Mussells concentrate pollutants, and the monitoring of mussels in the vicinity of the Diablo Canyon Plant will indicate the presence of elevated levels of toxic materials. Should these levels be significantly higher than at other monitoring stations, the program could be expanded to target the effects of these elevated levels.

M. EPA Criteria

Contention: Petitioner McHugh contends that the effluent limitations in B.l.b. of Order No. 82-24 for cadmium, copper, lead, mercury, and nickel are improper because they exceed EPA criteria for protecting aquatic life in seawater.

Findings: The water quality criteria promulgated by EPA, pursuant to Section 304 of the Clean Water Act, <sup>169/</sup> for the protection of aquatic life in saltwater <sup>170/</sup> are not applicable to the Diablo Canyon Plant discharge. <sup>171/</sup> The criteria have not been incorporated into the State Board's Ocean Plan as water quality standards; consequently, the Ocean Plan contains the controlling water quality standards for the Diablo Canyon Plant discharge. In our view, it is debatable whether EPA's criteria are as well-founded technically as the water quality standards contained in the State Board's Ocean Plan.

Nevertheless, the following table demonstrates that the discharge will comply with both the Ocean Plan standards and EPA's water quality criteria during normal, commercial operations:

	Order No. 82-24 <u>Limits</u>			<u>EPA Saltwater Criteria</u>	
	<u>Daily Max.</u>	<u>Instan. Max.</u>	<u>6-Mo. Median</u>	<u>24-hr. Avg.</u>	<u>Max. Concen.</u>
Cadmium	.012	.03	.003	.0045	.059
Copper	.020	.05	.005	.004	.023
Lead	.032	.08	.008	None specified	
Mercury	.00056	.0014	.00014	.0001	.0037
Nickel	.080	.2	.020	.007	.140

The cooling water discharged into the cove is required to meet the concentrations specified in Table B of the Ocean Plan before dilution. With the anticipated dilution of the discharge in the cove by a factor of 12, these constituents will be below Ocean Plan and EPA saltwater criteria.

N. Misrepresentations Regarding Fish Mortality Due to Entrainment

Contention: Petitioner McHugh also alleges that PG&E misrepresented the expected mortality rate of fish from entrainment at the Diablo Plant. He contends that the Regional Board should conduct an independent environmental investigation of the Diablo Canyon Plant.

Finding: During the Regional Board hearings on the Diablo Canyon Plant, PG&E representatives indicated that the company predicts a fish mortality rate due to entrainment of 5 percent. To support his allegations that PG&E misrepresented the projected rate, petitioner cites fish mortality data from a study of a Connecticut River nuclear powerplant. He asserts that the high rate of mechanical damage, leading to fish mortality, at the Connecticut plant demonstrates that PG&E is grossly misrepresenting expected effects at the Diablo Canyon Plant. There are

significant differences, however, between the Connecticut River plant and the Diablo Canyon Plant. These differences include the facts that the Connecticut plant has a higher intake velocity (0.3 to 0.6 m/sec versus 0.3 m/sec) and is located on a river. Besides these and other fundamental differences, the literature referenced by petitioner McHugh notes that the high percentage of mechanical damage may have been largely influenced by the fact that the study occurred during the season when the more fragile post yolk-sac stage fish were abundant. In sum, we are unable to find anything in the record or in petitioner's allegations which would substantiate his claim of misrepresentation.

O. Compliance with EPA Standards Under the Clean Water Act

Contention: Petitioners Joel Jaffer and Mothers for Peace allege generally that Order No. 82-24 does not comply with mass emission limitations, standards of performance, toxic pollutant discharge criteria, or BAT guidelines promulgated by EPA pursuant to the Clean Water Act.

Finding: This contention is completely unsupported by any specific allegations. Nevertheless, we have reviewed the provisions of Order No. 82-24 and conclude that the order complies with all applicable EPA limitations and standards. <sup>172/</sup> For the reasons explained previously, EPA's water quality criteria are not presumptively applicable to the Diablo Canyon Plant discharge. Our review indicates, however, that neither the constituents listed in Section IV. M. of this Order nor the

other constituents in Table B of the Ocean Plan will be discharged from the Diablo Canyon Plant in quantities which exceed EPA's criteria, after taking into account the dilution factor.

P. Additional Contentions.

Petitioners have raised a number of additional contentions, some of which we will briefly address. To the extent that this Order does not address other issues raised by a petitioner we have concluded that the issues are not substantial and do not warrant further review. <sup>173/</sup>

Petitioner Joel Jaffer has raised a number of issues regarding the compliance of Order No. 82-24 with the provisions of state and federal law. He has failed to specify the particular provisions of Order No. 82-24 which he finds objectionable; consequently, we are unable to review his contentions.

Petitioner Garrett Connelly requests "[a] declaration of jurisdictional assessment to the Public Utilities Commission regarding economics relative to public convenience and the necessity of Diablo Canyon Power Plant." In addition, he requests that the State Board inquire into the feasibility of using State Board hearings as a forum for Public Utilities Commission hearings when both agencies are involved in the same economic issue. The economics, per se, of the Diablo Canyon Plant is not an issue before this Board. Therefore, it would be unnecessary and inappropriate to grant petitioner's requests.

Petitioner Laurence H. Frommhagen contends that the Regional Board erred at the hearing on January 14, 1982, in limiting his cross-examination of PG&E regarding the radiation hazards of the Diablo Canyon facility. We do not find that the

Regional Board erred in placing limits on petitioner's cross-examination of PG&E. Even assuming, however, that any error occurred on January 14, 1982, we cannot find such error to be significant. For the reasons explained previously, the Regional Board has no authority to regulate radiation hazards associated with the discharge of radioactive wastewater from the Diablo Canyon facility.

Petitioner Jonathan R. McHugh argues that the Regional Board erred in failing to inquire into allegations of misrepresentation by PG&E regarding potential releases of radiation into ocean waters. Again, we find no error. Our review of the record does not support petitioner's allegation of intentional misrepresentation. In any event, however, the Regional Board lacks authority to regulate releases of radioactive wastewater into the ocean.

In addition, petitioner McHugh objects to Order No. 82-24 on the grounds that PG&E inappropriately attempted to influence Regional Board members regarding the NPDES permit for the Diablo Canyon Plant. He further maintains that the Regional Board members erred in refusing to answer questions regarding their possible ties with PG&E or its affiliates.

The transcript of the Regional Board hearing on January 14, 1982, indicates that a county supervisor, who had appointed Regional Board member Joan Wells to the county planning commission, was contacted by a partner in a PG&E public relations firm. The partner apparently asked the supervisor to attempt to change Ms. Wells' mind regarding her vote on Diablo Canyon. <sup>174/</sup> Additionally, Regional Board member Marit Evans

stated that she had been contacted by a friend, who told her that a former officer of PG&E had asked the friend to contact Ms. Evans. The friend apparently had information regarding cooling systems which she wished to convey to Ms. Evans, but Ms. Evans declined to meet with her. <sup>175/</sup>

As Regional Board counsel Mr. Gary Grimm explained to the Regional Board members, any direct or indirect ex parte contacts by a discharger with Regional Board members during an adjudicatory process are inappropriate. Mr. Grimm further advised the Regional Board that such contacts should be disclosed on the record and that any information gained as a result of the contacts should be disregarded by the Regional Board members in reaching a decision. In fact, information regarding the contacts was clearly disclosed on the record. While we strongly disapprove of such conduct, the contacts do not appear to have had any influence at all on the vote of the Regional Board members in question. Further, we find that the Regional Board acted properly in refusing to answer questions regarding possible ties with PG&E. <sup>176/</sup>

Petitioner Jonathan R. McHugh also objects to Order No. 82-24 on the grounds that the Regional Board failed to inquire into the effects of oil drilling on seismology in the Diablo Canyon area. The Regional Board has no authority, however, to regulate oil drilling in order to prevent earthquakes; consequently, the Regional Board did not err in failing to investigate this issue.

Petitioner Mothers for Peace objects to Order No. 82-24 on the grounds that issuance of the order was premature in light of the fact that the Independent Design Verification Program audit to be prepared by Teledyne Corporation for the NRC had not been completed. We find no error. The Diablo Canyon Plant permit issued in 1976 expired on May 1, 1981, and had to be reissued. It would have been improper for the Regional Board to wait until receipt of the independent audit report before reissuing a permit to PG&E, especially given the questionable relevance of the report to the Regional Board's responsibilities.

Additionally, Mothers for Peace contends that a discharge flow maximum, specified in B.l.f. of Order No. 82-24 of 2.67 billion gallons per day is excessive. We are unable to conclude that the flow volume, per se, is excessive. The discharge volume is significantly larger than most powerplants; however, this volume of water is necessary to remove the waste heat produced by this type of powerplant and not exceed the temperature limitations imposed on the facility.

Finally, in comments received by the State Board on February 17, 1983, PG&E raised several new issues regarding monitoring requirements imposed by the Regional Board. Specifically, PG&E contends that the monitoring program adopted by the Regional Board on September 10, 1982, is unreasonable. Additionally, PG&E objects to several requirements for special radiological monitoring in the monitoring program adopted by the Regional Board on January 14, 1982, and revised on September 10, 1982.

None of these issues were considered in our review of the petitions pending before the State Board in this matter.

No appeals were filed with the Board, challenging the Regional Board's action of September 10, 1982. In addition, none of the appeals pending before the Board raised issues regarding the radiological monitoring required by the Regional Board. <sup>177/</sup>

We, therefore, conclude that these issues should be remanded to the Regional Board for further consideration. In this regard, we note that a preliminary staff analysis of the current monitoring program for Order No. 82-24 indicates that some of the requirements may be inappropriate for steady-state operations of the Diablo Canyon Plant.

#### V. CONCLUSIONS

For the reasons explained above, the Board concludes as follows:

1. The State and Regional Boards lack authority under Porter-Cologne and the Clean Water Act to regulate the discharge of radioactive wastewater from the Diablo Canyon Plant. Therefore, the radioactivity limitations contained in Discharge Prohibition A.5. and Effluent Limitation B.1.b. of Order No. 82-24 must be deleted.

2. The State and Regional Boards should defer to the local and regional air pollution control authorities and to the State Air Resources Board in matters concerning the release of radioactive air emissions.

3. The Regional Board complied with CEQA in the issuance of Order No. 82-24.

4. Order No. 82-24 properly implements Section 316(b) of the Clean Water Act.

5. PG&E should submit an updated §316(b) plan of study for the approval of the Regional Board, in accordance with the provisions of this Order, within 90 days of the date of this Order or before the start of commercial operation, whichever is earlier.

6. The §316(b) study submitted by PG&E to the Regional Board should include an evaluation of alternative technologies for minimizing adverse environmental impacts due to the intake structure.

7. Findings Nos. 10 and 19 should be deleted.

8. The B.l.b. limits of Order No. 82-24 should be revised for operation of the plant with only the auxiliary saltwater cooling systems, in accordance with the findings of this order.

9. The total chlorine residual limit contained in B.l.b. of Order No. 82-24 should be revised in accordance with the findings of this Order.

10. Monitoring and Reporting Program No. 82-24 should be revised to require an annual grab sample for copper from 001B.

11. Monitoring and Reporting Program No. 82-24 should be revised to require an annual determination for arsenic based on a composite of grab samples of all contributing side streams flowing into 001.

12. The effluent limitations regulating pH levels in Order No. 82-24 are proper.

13. The thermal limitations in Order No. 82-24 are proper.

14. PG&G should expand the study referenced in Provision D.6 of Order No. 82-24 on alternative demusseling programs to include environmental considerations, in accordance with the findings of this Order.

15. Order No. 82-24, as amended by Order No. 82-54, is otherwise appropriate and proper.

#### VI. ORDER

IT IS HEREBY ORDERED that Findings 10 and 19 and Discharge Prohibition A.5 of Order No. 82-24 are hereby deleted.

IT IS FURTHER ORDERED that Order No. 82-24 is hereby revised in accordance with the provisions of Attachment 2.

IT IS FURTHER ORDERED that Monitoring and Reporting Program No. 82-24 is hereby revised in accordance with the findings of this Order.

IT IS FURTHER ORDERED that PG&E shall submit an updated 316(b) plan of study to the Regional Board, in accordance with the provisions of this Order, within 90 days of the date of this Order or before the start of commercial operations, whichever occurs first, and that PG&E shall include an evaluation of alternative technologies for minimizing adverse environmental impacts in its §316(b) study.

IT IS FURTHER ORDERED that PG&E shall expand the study referenced in Provision D.6 of Order No. 82-24 to include environmental considerations, in accordance with the provisions of this Order.

IT IS FURTHER ORDERED that the Regional Board shall reconsider Monitoring and Reporting Program No. 82-24.

IT IS FURTHER ORDERED that the petitions in this matter are otherwise denied.

Dated: March 17, 1983

ABSENT

Carole A. Onorato, Chairwoman

/s/ F. K. Aljibury

F. K. Aljibury, Member

/s/ Warren D. Noteware

Warren D. Noteware, Member

/s/ Kenneth W. Willis

Kenneth W. Willis, Member

Petitions by Joel Jaffer, etc.  
Files Nos. A-307, A-307(a)-(h)  
ORDER NO. WQ 83-

FOOTNOTES

1. The petition filed by the District was dated February 11, 1982, but was not received by the State Board until February 25, 1982. Water Code §13320 requires that petitions for State Board review of Regional Board actions be filed within 30 days of the disputed action. The State Board decided to treat the District's petition as timely, under this section, because it appeared that the original of the petition had been lost in the mails.
2. To the extent that the petition filed by Mothers for Peace sought review of portions of Order No. 82-24, which were not amended by Order No. 82-54, the petition was untimely under Water Code §13320. However, the Board decided to review the petition on the Board's own motion because the Board had several pending petitions for review of Order No. 82-24.
3. Because the petitions for review of Regional Board Orders Nos. 82-24 and 82-54 are legally and factually related, the petitions have been consolidated by the State Board. See 23 Cal.Admin.Code §2054.
4. According to a revised schedule submitted by PG&E to this Board, the company anticipates loading fuel at Unit 1 on March 31, 1983, beginning low power testing on May 15, 1983, and operating at full power on June 30, 1983.
5. These requirements were adopted on October 17, 1969.
6. The requirements were contained in Order No. 74-41, adopted on October 11, 1974.
7. Order No. 76-11 was adopted on April 9, 1976.
8. Provision D.2. of Order No. 82-24.
9. Effluent Limitation B.1.g. of Order No. 82-24, as amended; paragraph 2 of Order No. 82-54.
10. Effluent Limitation B.1.h. of Order No. 82-24, as amended; paragraph 2 of Order No. 82-54.
11. Provision D.6. of Order No. 82-24, as amended; paragraph 3 of Order No. 82-54.

12. Effluent Limitation B.1.f. of Order No. 82-24, as amended; paragraph 2 of Order No. 82-54.
13. Petitioners were notified by the State Board, in a letter dated November 19, 1982, that the Board did not intend to take action on the stay requests which had been filed, unless the NRC reissued, or proposed to reissue, the low power testing license for Unit 1.
14. A "Class 9" accident, according to proposed rulemaking by the NRC, constitutes a "very serious" accident, involving "sequences of postulated successive failure more severe than those postulated for the design basis for protective systems and engineered safety features". "Consideration of Accidents in Implementation of the National Environmental Policy Act of 1969", 36 Fed. Reg. 22847, 22862 (1971). (This proposed rulemaking was subsequently withdrawn by the NRC and replaced by new interim guidance. See "Nuclear Power Plant Accident Considerations under the National Environmental Policy Act of 1969", 45 Fed. Reg. 40101 (1980).)
15. The limits in question are Discharge Prohibition A.5. and Effluent Limitation B.1.b. of Order No. 82-24, as amended. They provide as follows:

"A. Discharge Prohibitions

\* \* \*

5. Release of radioactive materials in liquid effluents in excess of limits is prohibited. Monitoring for radioactive materials in liquid effluents shall be conducted in accordance with the technical specifications issued by the N.R.C.

"B. Effluent Limitations

1. Discharge 001

\* \* \*

- b. Effluent discharge shall not exceed the following limits:

\* \* \*

Radioactivity	Not to exceed limits specified in Title 17, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30269 of the California Administrative Code. In addition the Provisions of 10 CFR 20 and 10 CFR 50 shall apply."
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15. (continued from previous page)

The limits contained in Title 17, Chapter 5, Subchapter 4, Group 3, Article 3 were prescribed by the Department of Health Services. They are essentially identical to limits established by the NRC, which are contained in 10 CFR 20 and 50.

16. Florida Lime & Avocado Growers, Inc. v. Paul, 373 U.S. 132, 142-143 (1963).

17. See Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 232-236 (1947).

18. Northern States Power Co. v. Minnesota, 447 F.2d 1143 (8th Cir. 1971), aff'd mem. 405 U.S. 1035 (1972).

19. Id. at 1146.

20. See generally Murphy & La Pierre, Nuclear "Moratorium" Legislation in the States and the Supremacy Clause: A Case of Express Preemption, 76 Colum.L.Rev. 392, 394-415 (1976); Henderson, The Nuclear Choice: Are Health & Safety Issues Pre-empted?, 8 B.C. Environ. Aff. L. Rev. 821, 825-860 (1980); Woychik, State Opportunities to Regulate Nuclear Power and Provide Alternate Energy Supplies: Part 1, 15 U. San Francisco L. Rev. 129, 132-158 (Fall 1980/Win. 1981).

21. Atomic Energy Act of 1946, ch. 724, 60 Stat. 755.

22. Atomic Energy Act of 1954, ch. 1073, 68 Stat. 919, as amended, 42 U.S.C. §§2011-2284 (1982).

23. 42 U.S.C. §2013(d).

24. "Production facility" is defined as:

"(1) any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission." (42 U.S.C. §2014(v).)

25. A "utilization facility" means:

"(1) any equipment or device, except an atomic weapon, determined by rule of the Commission to be capable of making use of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the

25. (continued from previous page)

public, or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission." (42 U.S.C. §2014(cc).)

26. "Source material" is defined as:

"(1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 2091 of this title to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time." (42 U.S.C. §2014(z).)

27. "Special nuclear material" means:

"(1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 2071 of this title, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material." (42 U.S.C. §2014(aa).)

28. "Byproduct material" is:

"(1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." (42 U.S.C. §2014(e).)

29. See 42 U.S.C. §§2073, 2093, 2111, 2133.

30. Id. §2018. In 1965 this section was amended to provide that the section "shall not be deemed to confer upon any Federal, State, or local agency any authority to regulate, control or restrict any activities of the Commission", as opposed to licensees of the Commission. (79 Stat. 551.)
31. S. Rep. No. 870, 86th Cong., 1st Sess., (1959) reprinted in [1959] U.S. Code Cong. & Ad. News 2872, 2875.
32. 42 U.S.C. §2021.
33. Id. (b). California is an agreement state. The provisions of the agreement between the State and the AEC (now NRC) are contained in Health and Safety Code §25876. Under Chapter 7.6, Division 20 of the Code, the Radiation Control Law, the Department of Health Services is responsible for exercising the regulatory and licensing authority transferred to the State by the AEC.
34. Id. (g).
35. S. Rep. No. 870, fn. 31 supra, [1959] U.S. Code Cong. & Ad. News at 2879, 2882.
36. See, e.g., Northern States Power Co. v. Minnesota, fn. 18, supra, 447 F.2d at 1149, fn.6; 10 CFR §8.4(i) fn. 19.
37. S. Rep. No. 870, fn. 31, supra, [1959] U.S. Code Cong. & Ad. News at 2879.
38. Id. at 2882-83.
39. Fn. 18 supra, 447 F.2d at 1144.
40. Id. at 1149.
41. See p. 12 of this Order, supra.
42. 447 F.2d at 1149-50.
43. Id. at 1154.
44. P.L. 92-500, 86 Stat. 816, 33 U.S.C. §§1251 et seq.
45. Id. 33 U.S.C. §1342.
46. Id. §1362(6).
47. 42 U.S.C. §§5801-5891.
48. ERDA's functions were subsequently transferred to the Department of Energy. 42 U.S.C. §7151(a).

49. Henderson, The Nuclear Choice: Are Health & Safety Issues Pre-empted?, fn. 20, supra, at 857-858.
50. 42 U.S.C. §§7401-7626.
51. Id. §7422; Pacific Legal Foundation v. State Energy Resources Conservation and Development Commission, 659 F.2d 903, 927 (Ninth Circuit, 1981), U.S. App. Pndg, 102 S.C. 2956 (1982). See generally Stensvaag, State Regulation of Nuclear Generating Plans Under the Clean Air Act Amendments of 1977, 55 So.Calif.L.Rev. 511 (March 1982).
52. 42 U.S.C. §/416.
53. Joint Explanatory Statement of the Committee on Conference, H.R. Rep. No. 564, 95th Cong., 1st Sess. 143 (1977), reprinted in [1977] U.S. Code Cong. & Ad. News 1502, 1523-24.
54. P.L. 95-217, 91 Stat. 1567. The Federal Water Pollution Control Act, as amended, is commonly referred to as the "Clean Water Act".
55. Fn. 51, supra.
56. Cal. Pub. Res. Code §§25000-25986.
57. Id. §25503.
58. Id. §25524.2.
59. 659 F.2d at 919-928.
60. See, e.g., Northern Cal. Ass'n to Preserve Bodega Head and Harbor, Inc. v. Public Util. Comm'n, 61 Cal.2d 126, 37 Cal. Rptr. 432, 390 P.2d 200 (1964); Marshall v. Consumers Power Co., 65 Mich. App. 237, 237 N.W.2d 266 (1975); City of Cleveland v. Public Util. Comm'n, 64 Ohio St.2d 209, 414 N.E.2d 718 (1980); People v. Kerr-McGee Chem. Corp., 677 F.2d 571 (7th Cir. 1982)
61. Cal. Water Code §§13000 et seq. Section 13050(d) defines "waste", the discharge of which is regulated under the Act, as:

"...sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature, including such waste placed within containers of whatever nature prior to, and for purposes of, disposal." (Emphasis added.)

(continued on next page)

61. (continued from previous page)

Although this definition includes radioactive substances, under Northern States the definition must be read to exclude substances regulated by the NRC, e.g., radioactive effluent from nuclear reactors.

62. See fn. 15, supra.

63. The act declares a legislative intent that "activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable...." (Water Code §13000) Under the Act, any person discharging or proposing to discharge waste that could affect water quality is required to file a report of waste discharge. Id. §13260. The appropriate Regional Board must prescribe requirements for the discharge "with relation to the conditions existing from time to time in the disposal area or receiving waters upon or into which the discharge is made or proposed". Id. §13263. The Act defines "waste" to include gaseous substances. Id. §13050(d).

64. Cal. Health & S. C. §§39000 et seq.

65. Id. §39002. The local agency which has regulatory authority over air quality in San Luis Obispo County is the San Luis Obispo County Air Pollution Control District.

66. Id.

67. Id. §39003.

68. Id. §39602.

69. Pub. Res. C. §§21000 et seq.

70. Section 13389 provides:

"Neither the state board nor the regional boards shall be required to comply with the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code prior to the adoption of any waste discharge requirement, except requirements for new sources as defined in the Federal Water Pollution Control Act or acts amendatory thereof or supplementary thereto."

The Diablo Canyon Plant is not a "new source" as defined in the Clean Water Act. See 33 U.S.C. §1316(a)(2); 40 CFR §122.3.

71. See Pacific Water Conditioning Assoc., Inc. v. City Council of Riverside, 73 Cal.App.3d 546, 555, 140 Cal.Rptr. 813 (1977). The licensing of the Diablo Canyon Plant was not exempt from the provisions of the National Environmental Policy Act of 1969 [NEPA], however. 42 USC §§4321 et seq.; see 10 CFR Part 57. This Act requires that all agencies of the federal government prepare detailed environmental statements on major federal actions significantly affecting the quality of the human environment. 42 USC §4332. In accordance with NEPA, the AEC completed a Final Environmental Statement (FES) for the Diablo Canyon Plant in May 1973, and an Addendum was issued by the NRC in May, 1976. Finding No. 21 of Order No. 82-24 cites the water quality related impacts of plant construction and operation which were identified in the FES and the Addendum. Neither document addresses the consequences on liquid pathways of a "Class 9" accident. See 13 NRC 1122 (1981).
72. 14 Cal.Admin.Code §15079. As indicated in fn. 70, supra, the Diablo Canyon Plant is not a new source.
73. 33 U.S.C. §1326(b).
74. "Entrainment" is the drawing of small aquatic organisms through the plant condensers.
75. "Impingement" is the drawing against the intake screen or pumps of small aquatic organisms.
76. Bergen, Thermal Discharges & Power Plant Intakes: Section 316(b) in Perspective, 11 Nat.Res.L. 305, 317 (1978).
77. P. 17, Prov. D.7.(b). A requirement that the discharger submit studies demonstrating compliance with §316(b) was also contained in PG&E's 1974 and 1976 permits. Prov. B.5. of Order No. 74-41; Prov. D.3 of Order No. 76-11.
78. Environmental Investigations at Diablo Canyon, 1978 (1981), Ch. 5.
79. Environmental Investigations of Diablo Canyon, 1975-1977 (1978), Vol. II, Chs. 2 and 3.
80. Id. Ch. 4.
81. Id. Vol. I, Ch. 10.
82. Id. Ch. 11.
83. Reporter's Transcript [RT], Oct. 29, 1981, pp. 65, 68, 91-92.
84. B.1.b. provides, in pertinent part:  
"Effluent discharge shall not exceed the following limits:

(continued on next page)

84. (Continued from previous page)

	Concentration, mg/l (except as noted)		
	6-Month <u>Median</u>	Daily <u>Maximum</u>	Instan- taneous <u>Maximum</u>
Arsenic	0.008	0.032	0.08
Cadmium	0.003	0.012	0.03
Total Chromium	0.002	0.008	0.02
Copper	0.005	0.020	0.05
Lead	0.008	0.032	0.08
Mercury	0.00014	0.00056	0.0014
Nickel	0.02	0.08	0.2
Silver	0.00045	0.0018	0.0045
Zinc	0.020	0.08	0.2
Cyanide	0.005	0.02	0.05
Phenolic Compounds	0.025	0.05	0.08
Total Chlorine Residual	0.03	0.1	0.3
Grease and Oil	5.0	10.0	20.0
Ammonia (expressed as nitrogen)	0.1	0.2	0.3
Toxicity Concentration	0.7 tu	---	---
Total Chlorinated Pesticides	0.002	0.004	0.006 "

85. Section 101(a); 33 U.S.C. §1251(a).

86. Id.

87. 33 U.S.C. §1311.

88. Id. §1131(b)(2)(A) and (C).

89. Id. (b)(1)(C).

90. Id. §1313.

91. Id. (c)(2).

92. Id. §§1311 and 1342(a)(1); 40 C.F.R. §§122.62 and 125.3.

93. 40 C.F.R. §125.3(a).

94. See 40 C.F.R. §122.62 and 125.3.

95. 40 C.F.R. §122.62(c)(2).

96. See E.P.A.'s "Revised NPDES Second Round Permits Policy", dated August 29, 1980, page 2.

97. 40 C.F.R. §125.3(c)(2).
98. 33 U.S.C. §1314(b)(2)(B).
99. EPA subsequently promulgated BAT limits on November 19, 1982. from this category of point source. 47 Fed.Reg. 52290-52309.
100. See E.P.A.'s "Revised Second Round Permit Policy", fn. 96, supra, page 2.
101. Compare the B.l.b. limits of Order No. 82-24, fn. 84, supra, with the comparable portions of Table B of the Ocean Plan:

"Limiting Concentrations"

	Unit of Measure- ment	6-Month Median	Daily Maximum	Instan- taneous Maximum
Arsenic	mg/l	0.008	0.032	0.08
Cadmium	mg/l	0.003	0.012	0.03
Total Chromium	mg/l	0.002	0.008	0.02
Copper	mg/l	0.005	0.020	0.05
Lead	mg/l	0.008	0.032	0.08
Mercury	mg/l	0.00014	0.00056	0.0014
Nickel	mg/l	0.02	0.08	0.2
Silver	mg/l	0.00045	0.0018	0.0045
Zinc	mg/l	0.020	0.08	0.2
Cyanide	mg/l	0.005	0.02	0.05
Phenolic Compounds	mg/l	0.03	0.12	0.3
Total Chlorine Residual	mg/l	0.002	(See Footnote <u>11/</u> )	
Ammonia (expressed as nitrogen)	mg/l	0.6	2.4	6.0
Toxicity Concen- tration	tu	0.05	---	---
Total Chlorinated Pesticides and PCB's [sic]	mg/l	0.002	0.004	0.006"

102. Ocean Plan, Ch. IV, p. 5.
103. Id., p. 12, fn. 10. Guidance on estimating initial dilution Is contained in the State Board's "Table B. Guidelines" for the Ocean Plan.
104. Id., Ch. VI.A., p. 7.
105. App. 4 to P.G.&E.'s "Comments on Seventh Draft of NPDES Permit for Diablo Canyon Power Plant January 11, 1982."
106. Finding 10 of Order No. 82-24. The flow, 2.67 billion gallons per day, exceeds the cumulative daily flow discharged from all municipal sewage treatment plants in the State and, at 4100 cfs, might be graphically described as a river.

107. P.G.&E's "Response to Questions Raised by Board Members at the September 11, 1981 Hearing" [Responses], Ocean Plan, Question 1; R.T., Sept. 24, 1981, p. 78.
108. R.T., Sept. 24, 1981, p. 99.
109. Id., pp. 97, 99.
110. Id., p. 100.
111. Id.
112. Id., pp. 99, 100.
113. Attachment 1 to this Order provides a comparison between the concentrations of heavy metals predicted to be discharged by PG&E during normal operations versus the concentrations allowed under Order No. 82-24. The figures under the column for Order No. 82-24 are roughly one-twelfth of those which would be allowed under an application of the Ocean Plan which assumed a 12 to 1 dilution.
114. Responses, fn. 107 supra, Ocean Plan, Question 1.
115. Id., R.T., Oct. 9, 1981, p. 136.
116. Responses, fn. 107 supra, Ocean Plan, Question 1.
117. R.T., Oct. 9, 1981, p. 139.
118. Responses, fn. 107 supra, Ocean Plan, Question 1; R.T., Sept. 24, 1981, p. 106.
119. R.T., Sept. 24, 1981, pp. 78, 102.
120. R.T., Sept. 24, 1981, pp 81-82; R.T., Oct. 29, 1981, p. 39.
121. P.G.&E.'s "Responses to Questions Raised by Dr. Cota, January 7, 1982, "Thermal/Volume and Appendix 3.
122. Id.
123. R.T., Nov. 14, 1981, Vol. 1, pp. 93, 103, 105, 109, 112-113; R.T., Jan. 14, 1982, Vol. 2, pp. 44-45, 52-53, 116-117.
124. See Attachment 1 to this Order.
125. See fn. 99 supra
126. 47 Fed.Reg. 52299, 52303-52304.
127. 40 CFR §125.3(c)(2).
128. 47 Fed.Reg. 52302.
129. See, e.g., R.T., Jan. 14, 1982, Vol. 2, pp. 37-38.

130. Section 304 of the Clean Water Act, 33 USC §1314(b)(2)(B).
131. 116 Cal.App.3d 751, 172 Cal.Rptr. 306 (1981).
132. Ocean Plan, Ch. VI, B., p. 7; Southern California Edison, 116 Cal.App.3d at 758-59.
133. Section 402(a)(1) of the Clean Water Act, 33 USC §1342(a)(1); 40 CFR §§122.62(a) and (b), 125.3(a).
134. See Attachment 1 to this Order.
135. This dilution factor was calculated based upon staff's engineering judgment, data in the Regional Board record, and the Ocean Plan's "Table B Guidelines." The 4 to 1 dilution factor was calculated for the "worst case" situation, assuming a flow of 22.3 cfs from one of the auxiliary saltwater cooling systems with one pump in operation.
136. The effluent limitations in B.1.b.ii of Attachment 2 of this Order include a six-month median toxicity concentration of 0.25 toxicity units. We note that Finding 19 of Order No. 82-24 states that presently available methods for calculation of toxicity in seawater do not allow for measurement of lower limits than 0.7. This finding is not supported by the record. The record indicates only that a discharger cannot demonstrate compliance with a toxicity concentration of 0.05 toxicity units. Because Finding 19 is inconsistent with the toxicity concentration contained in B.1.b.ii of Attachment 2 to this Order, we have determined that the Finding should be deleted.

A toxicity concentration of 0.25 is required under the Ocean Plan for the Diablo Canyon Plant discharge, assuming a 4 to 1 dilution, when only the auxiliary saltwater pumps are operating. We recognize that PG&E may find it difficult to show compliance with this limit using traditional bioassay techniques. As a practical matter, PG&E can demonstrate compliance with this limit if no specimens in a normal-sized bioassay die half of the time.

137. Ocean Plan, fn. 6, p. 11.
138. The monitoring program was subsequently revised on September 10, 1982. See the discussion in Section IV.P of this Order infra.
139. State Board technical staff has estimated that PG&E's monitoring costs might increase approximately \$6,000 to \$10,000 per year.

140. B.1.C. also provides:

".... Longer periods of chlorination may be used as long as the maximum concentration is reduced to comply with the time-concentration relationship contained in the California Ocean Plan. Chlorination periods shall not exceed two hours per day per generating unit at any time. At least thirty minutes must separate the chlorine discharged from each one-half condenser unit."

141. See fn. 129 supra.

142. Section 301(b)(2)(F), 33 USC §1311(b)(2)(f).

143. 33 US. §1342(a)(3) and (b)(1)(B); 40 CFR §122.9(a).

144. 40 CFR §122.9(e).

145. See fns. 84 and 101, supra.

146. The monitoring program for Order No. 82-24 requires grab samples for arsenic. As it now stands, the required grab samples can only be used to test the instantaneous maximum for arsenic (0.08 mg/l); that is, any sample below the detection limit of 0.053 mg/l will violate the 6-month median and the daily maximum, 0.008 and 0.032 mg/l, respectively, by virtue of the convention of reporting the detection level limit in place of any actual [lower] concentration.

147. See 45 Fed.Reg. 79331 (November 28, 1980).

148. 33 USC §§1311(b)(1)(C), 1370.

149. 40 CFR Part 423, 39 Fed.Reg. 36186 et seq.

150. 39 Fed.Reg. 36198.

151. Order No. 76-11, Discharge Prohibition A.1.

152. Appalachian Power Co. v. Train, 545 F.2d 1351 (1976)

153. See Water Code §§13240, 13263.

154. Thermal Plan, p. 2, paragraph 10.

155. Id., p. 4, 3.B(3).

156. Id., 3.A.

157. The report prepared by TERA Corporation for PG&E entitled "Thermal Discharge Assessment Report" (March 30, 1982) contains the following description of heat treatment:

"Operating experience at other marine power plants has shown that a 'fouling community' will develop in the cooling water conduits after a short period of time. This marine invertebrate community will be composed mainly of mussels and barnacles. The development of this community can cause severely constricted flow through the condenser tubes by mussels and barnacle shells which slough off the conduit walls and plug the condenser tubes. If allowed to grow, this fouling community would eventually reduce flow to the extent that the power plant would have to be shutdown and each tube manually cleaned. To prevent such an occurrence at DCPP, recirculating hot water (110°F) is used to remove fouling organisms in the cooling system intake conduits, which results in a heat discharge of one-fourth the normal discharge volume at a temperature of 100°F from the unit being treated." (p. 4-49 through 4-50.)

158. Id. at 4-54.

159. Id.

160. See Water Code §13050(1), which defines pollution as "an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects (1) such waters for beneficial uses, or (2) facilities which serve such beneficial uses."

161. Water Code §13000.

162. Id. §13241.

163. Page 3, paragraph 3.

164. 40 CFR §122.7(f). A permit may be modified or terminated if the permitted activity endangers human health or the environment. See 40 CFR §§122.15(b)(1), 122.16(a)(3).

165. See State Board publication entitled "Areas of Special Biological Significance" (July 1976). The discharge of elevated temperature wastes in these areas in a manner which would alter water quality conditions from those occurring naturally is prohibited. Id. p. 3, B.4.A.

166. See PG&E report entitled "Assessments of Alternatives to the Existing Cooling Water System", (1982).

167. The following table, from "Responses to Questions Raised by Dr. Cota" (January 7, 1982), submitted by PG&E to the Regional Board provides a comparison of the Diablo Canyon Plant with other coastal powerplants:

TABLE 1  
OCEAN-SITED POWER PLANTS

	Capacity (MWe)	Ambient Temperature Range (°F)	Condenser Delta-T (F°)	Cooling Water (CFS)	Heat Treatment Maximum Temperature - (and/or Max. ΔT) °F	Receiving Water Body	Discharge Type	Discharge Depth (feet)	Distance from Shore (feet)
Alamitos	1,950	50-70	18	1,967	110	Pacific Ocean	Shoreline	Surface	-
+ Diablo Canyon	2,190	48-68	22	3,864	50ΔT	Pacific Ocean	Shoreline	Surface	-
El Segundo	1,020	50-70	22	936	125	Pacific Ocean	Single Port	16	1,750
Encina	937	50-76	20	1,225	60ΔT	Pacific Ocean	Shoreline	Surface	-
Haynes	1,625	50-70	20	1,513	115 65ΔT	Pacific Ocean	Shoreline	Surface	-
Huntington Beach	870	53-71	26	798	130	Pacific Ocean	Single Port	20	1,500
Mandalay	456	53-73	22	395	125	Pacific Ocean	Shoreline	Surface	-
East Coast + Millstone 1 & 2	1,522	34-75	23	2,275	105	L. I. Sound	Shoreline	Surface	-
+ Millstone 3*	1,150		18	2,000		L. I. Sound	Shoreline	Surface	-
Morro Bay	1,056	50-60	20	1,118	35ΔT	Pacific Ocean	Shoreline	Surface	-
Moss Landing 6&7	1,500	50-60	24	1,337	40ΔT	Pacific Ocean	Single Port	20	700
East Coast + Ormond Beach	1,500	56-62	30	1,063	125	Pacific Ocean	Single Port	20	1,350
+ Pilgrim	655	34-60	32	720	120	Atlantic Ocean	Shoreline	Surface	-
Redondo Beach 1-6	1,579	50-70	27	693	125	Pacific Ocean	Single Port	25	1,600
Redondo Beach 7-8	990		27	1,042	125	Pacific Ocean	Single Port	20	300
San Onofre 1	430	55-72	19	693	125	Pacific Ocean	Single Port	24	2,600
San Onofre 2&3*	2,254		20	3,627		Pacific Ocean	Diffuser	40-50	8,500, 6,200
Scattergood	818	50-70	16	760	135	Pacific Ocean	Single Port	15	1,200
East Coast + Seabrook	2,300	34-61	39	1,822	120	Atlantic Ocean	Diffuser	50-60	5,200
+ St. Lucie 1	850	60-85	24	1,150	120	Atlantic Ocean	Y-Port	30	1,200
+ St. Lucie 2*	850		24	1,150	**	Atlantic Ocean	Multi-Port	30-40	2,000

\* Under Construction

+ Nuclear Power Plants

168. In particular, petitioner claims that the daily maximum discharge concentrations for cadmium and lead from the Diablo Canyon Plant will cause chemical mutagens. He also cites a study on the effects of these elements on plankton in a harbor situation. Using a dilution rate of 12 to 1 and the six-month median concentration specified in B.l.b. of Order No. 82-24, the yearly average receiving water concentrations of lead and cadmium are about 50 times less than the petitioner's figures. Furthermore, plankton next to the discharge pipe will not experience the doses presumed by petitioner because they will be readily dispersed by the discharge plume. Species that will stay fixed in the cove, such as mussels, would provide a better test of the petitioner's contentions.

169. 33 USC §1314.
170. See 45 Fed.Reg. 79318-79379 (November 28, 1980).
171. See 33 USC §1342(a)(1).
172. As explained previously, EPA published revised regulations governing the steam electric power generating point source category on November 19, 1982. 40 CFR Parts 125 and 423. Our review of the effluent limitation guidelines in 40 CFR Part 423 for this category indicates that Order No. 82-24 is in compliance with EPA requirements. See 40 CFR §§423.12 and 423.13. Our revision of the chlorine limitation, as discussed in Section IV.E. of this Order, will also ensure compliance with the EPA-promulgated BAT limit for total chlorine residual.
173. See 23 C.A.C. §2052(a)(1).
174. R.T. p. 3.
175. R.T. p. 4.
176. See Feist v. Rowe, 3 Cal.App.3d 404, 414, 83 Cal.Rptr. 465 (1970).
177. In this regard, we note that, at one point during the Regional Board hearings on the Diablo Canyon permit, a PG&E representative commented that the company had agreed to expand its radiological monitoring program. The comment was in reference to Paragraph 7 on page 4 of the monitoring program in the October 9, 1981, draft set of waste discharge requirements for the Diablo Canyon Plant. R.T., Nov. 13, 1981, p. 210. These provisions are now contained in Paragraph 8 of the current monitoring program.

TABLE A  
<sup>4</sup>  
 COMPARISON OF TOXIC MATERIAL LIMITATIONS  
 IN ORDER NO. 82-24 WITH  
 PG&E ESTIMATIONS WITH MAIN COOLING WATER FLOWS  
 (ug/l)

PARAMETER	NORMAL OPERATIONS		START-UP OPERATIONS	
	ORDER NO. 82-24	ASSESSMENT <sup>1</sup> DOCUMENT	ORDER NO. 82-24	RESPONSE <sup>2</sup> DOCUMENT
Arsenic	5.0	<1.0	29.0	0.3
Cadmium	3.0	<1.0	12.0	0.1
Chromium	2.0	0.04	8.0	1.5
Copper	3.0	0.04	18.0	9.0
Lead	8.0	<1.0	32.0	0.1
Mercury	0.08	<0.01	0.5	0.2
Nickel	20.0	0.12	80.0	4.0
Silver	0.29	<0.1	1.6	0.3
Zinc	12.0	0.1	72.0	22.0
Cyanide	5.0	<1.0	20.0	0.1
Phenolic Compounds	30.0	<1.0	50.0	0.1
Total Cl <sub>2</sub>	30.0	0.3	100.0 <sup>3</sup>	300.0
Ammonia	100.0	<1.0	200.0	40.0

<sup>1</sup> The document, "Assessment of Alternatives to the Existing Cooling Water System", March 30, 1982, presented steady state concentrations on page 1-16, Table 1-3.

<sup>2</sup> The document, "Responses to questions raised by Board Members at the September 11, 1981 Hearing", presented worst case, maximum discharge concentrations for start-up operations.

<sup>3</sup> This Order provides a 300 ug/l concentration.

<sup>4</sup> Concentrations are based on toxic materials added by the plant. Background seawater concentrations have been subtracted from Order No. 82-24 and the Assessment Document.

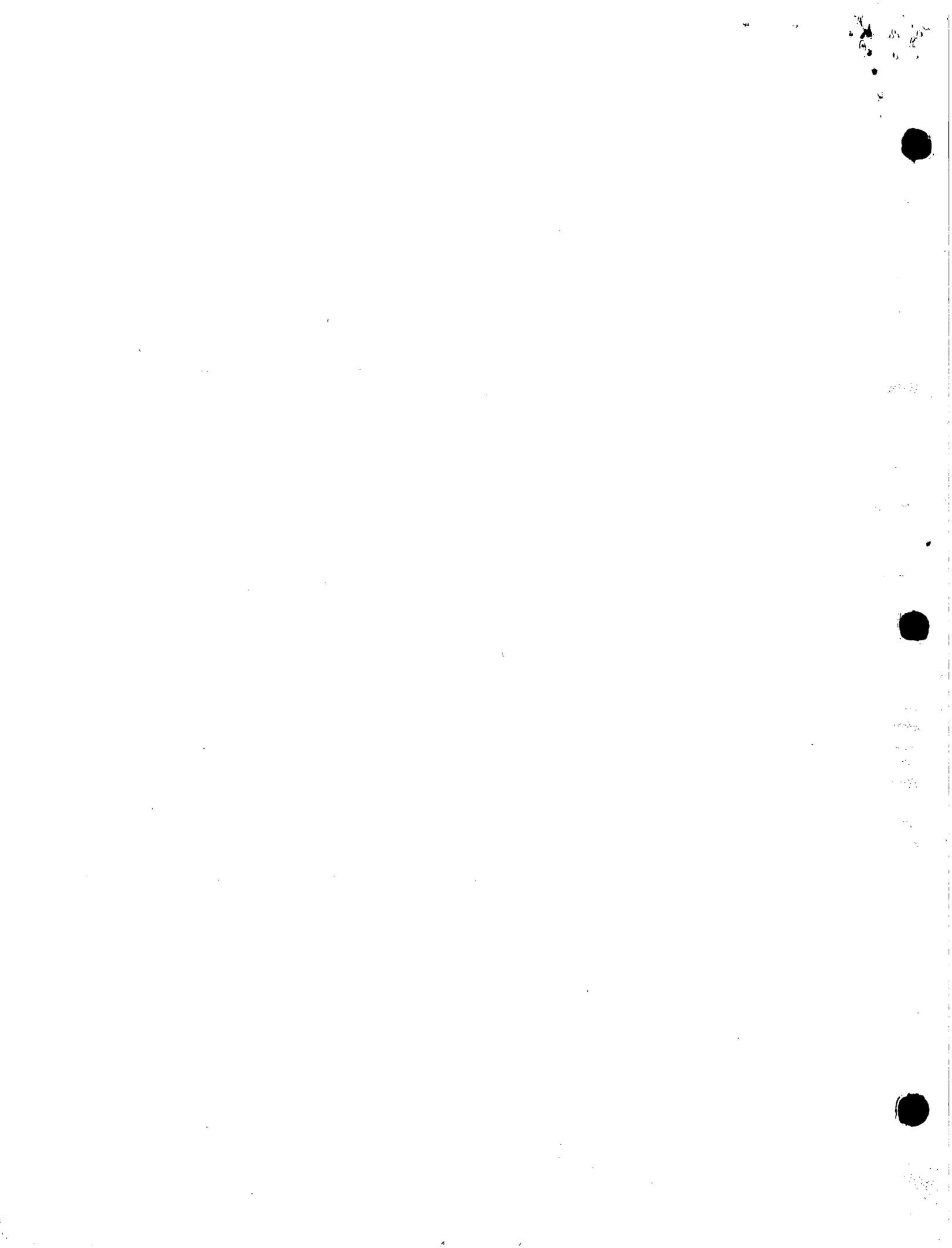
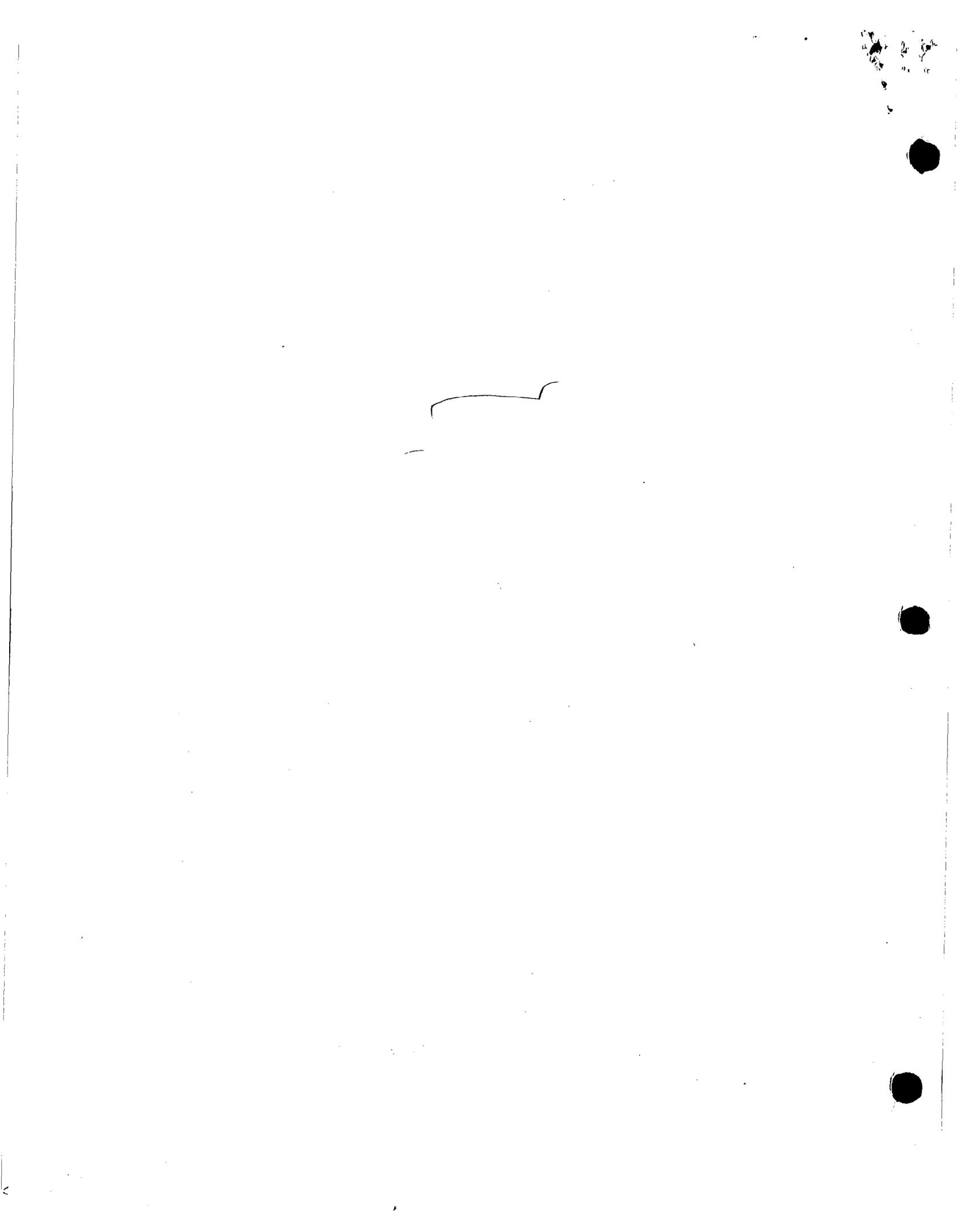


TABLE B

COMPARISON<sup>4</sup> OF TOXIC MATERIAL LIMITATIONS  
 IN ORDER NO. 82-24 WITH  
 PG&E ESTIMATIONS WITHOUT MAIN COOLING WATER FLOW  
 (ug/l)

PARAMETER	LONG-TERM OPERATIONS		INSTANTANEOUS MAXIMUM	
	ORDER NO. 82-24	ASSESSMENT DOCUMENT	ORDER NO. 82-24	ASSESSMENT DOCUMENT
Arsenic	5.0	<1.0	77.0	11.5
Cadmium	3.0	<1.0	30.0	1.6
Chromium	2.0	2.2	20.0	62.0 <sup>5</sup>
Copper	3.0	2.2	48.0	422.0 <sup>5</sup>
Lead	8.0	<1.0	80.0	1.6
Mercury	0.08	<0.01	1.3	0.8
Nickel	20.0	7.1	200.0	183.0 <sup>5</sup>
Silver	0.29	<0.1	4.3	0.12
Zinc	12.0	3.1	192.0	546.0 <sup>5</sup>
Cyanide	5.0	<1.0	50.0	<1.0
Phenolic Compounds	30.0	<1.0	80.0	0.78
Total Cl <sub>2</sub>	30.0	<1.0	300.0	18.0
Ammonia	100.0	<1.0	300.0	496.0 <sup>5</sup>

<sup>5</sup> These values are for all sidestream flows. No information is available on the likelihood of this occurrence during discharges when power is not being generated at the plant.



1. Delete B.1.b of Order No. 82-24 and substitute the following:

B.1.b Effluent discharge shall not exceed the following limits:  
(Concentration, mg/l; except as noted)

- i. During operations of the main condenser cooling water system and any other time not covered by ii below:

	<u>6-Month Median</u>	<u>Daily Maximum</u>	<u>Instantaneous Maximum</u>
Arsenic	0.008	0.032	0.08
Cadmium	0.003	0.012	0.03
Total Chromium	0.002	0.008	0.02
Copper	0.005	0.020	0.05
Lead	0.008	0.032	0.08
Mercury	0.00014	0.00056	0.0014
Nickel	0.02	0.08	0.2
Silver	0.00045	0.0018	0.0045
Zinc	0.020	0.08	0.2
Cyanide	0.005	0.02	0.05
Phenolic Compounds	0.025	0.05	0.08
Total Chlorine	0.03*	0.3*	---
Residual	0.03**	0.2**	---
Grease and Oil	5.0	10.0	20.0
Ammonia (expressed as nitrogen)	0.1	0.2	0.3
Toxicity Concentra- tion	0.7 tu	---	---
Total Chlorinated Pesticides	0.002	0.004	0.006

\* Before compliance date set forth in Provision 13.

\*\*After compliance date set forth in Provision 13.

- ii. During operations when the auxiliary saltwater cooling system comprises the main discharge and the flow rate exceeds 10,000 gpm.

	<u>6-Month Median</u>	<u>Daily Maximum</u>	<u>Instantaneous Maximum</u>
Arsenic	0.028	0.15	0.39
Cadmium	0.015	0.06	0.15
Total Chromium	0.01	0.04	0.10
Copper	0.017	0.092	0.24
Lead	0.04	0.16	0.4
Mercury	0.00046	0.0026	0.0068
Nickel	0.10	0.40	1.0
Silver	0.0016	0.0084	0.0219
Zinc	0.068	0.37	0.97
Cyanide	0.025	0.10	0.25
Phenolic Compounds	0.15	0.60	1.5
Total Chlorine Residual	0.01	0.20	---
Grease and Oil	5.0	10.0	20.0
Ammonia (expressed as nitrogen)	3.0	12.0	30.0
Toxicity Concentra- tion	0.25 tu	---	---
Total Chlorinated Pesticides and PCBs	0.002	0.004	0.006

2. Add a new Provision 13 as follows, and renumber existing Provision 13 as Provision 14:

13. Discharger shall achieve compliance with EPA promulgated effluent limitations for best available technology economically achievable (BAT) for total residual chlorine according to the following schedule:

<u>Task</u>	<u>Completion Date</u>	<u>Report Compliance Due</u>
Start Minimization Program	Date of start of commercial power operation (CPO)	15 days after start of CPO
Complete Minimization Program	CPO date plus 12 months	15 days after completion date
Complete Alternative Technology (if necessary)	CPO date plus 18 months	15 days after completion date
Full Compliance	If minimization is successful: CPO plus 12 months or 11/19/85, whichever is sooner. If alternative technology is necessary: CPO plus 18 months or 11/19/85, whichever is sooner.	11/30/85

